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• Illustrated below is the Buda Model 6-DCS-1879 Supercharged Diesel Drilling Engine . . . the type referred to in the accompanying letter. Packing plenty of power, this and its companion natural gas — butane — propane "1879" engines are setting new records for dependability and economy throughout the oil country.

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This last pair of Supercharged engines were used as replacement of some 12 cylinder Natural Gas engines on one of our drilling rigs operating in West Texas at a depth of 7,200 ft. The Buda engines were put on this rig and without any preliminary breaking in, we completed the well to a depth of 5,600 ft. with 15 drill collars on the bottom of the drill string. At that time we were using a 7-3/4 x 16 mud pump, 650 lbs. pressure, and despite the fact that these engines were new, we felt that we had considerably more power left had we required it.

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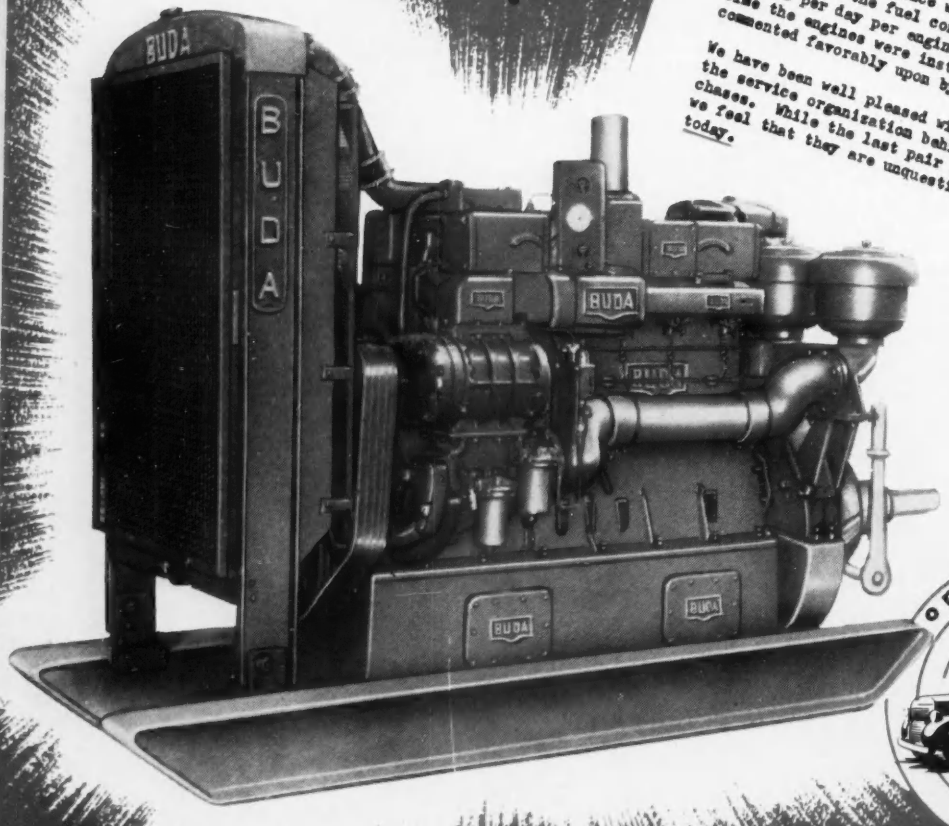
We have been well pleased with the performance of our Buda engines and with the service organization behind them, a fact borne out by our continued purchases. While the last pair of engines have been in service but a short time, we feel that they are unquestionably the most ideal drilling engines available today.

Sincerely yours,
VIERSEN & COCHRAN
By Geo Tuckett
Drilling Superintendent



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The OIL WEEKLY

ENGINEERING NEWS STATISTICS

R. L. DUDLEY, President, Publisher A. L. BURNS, General Manager

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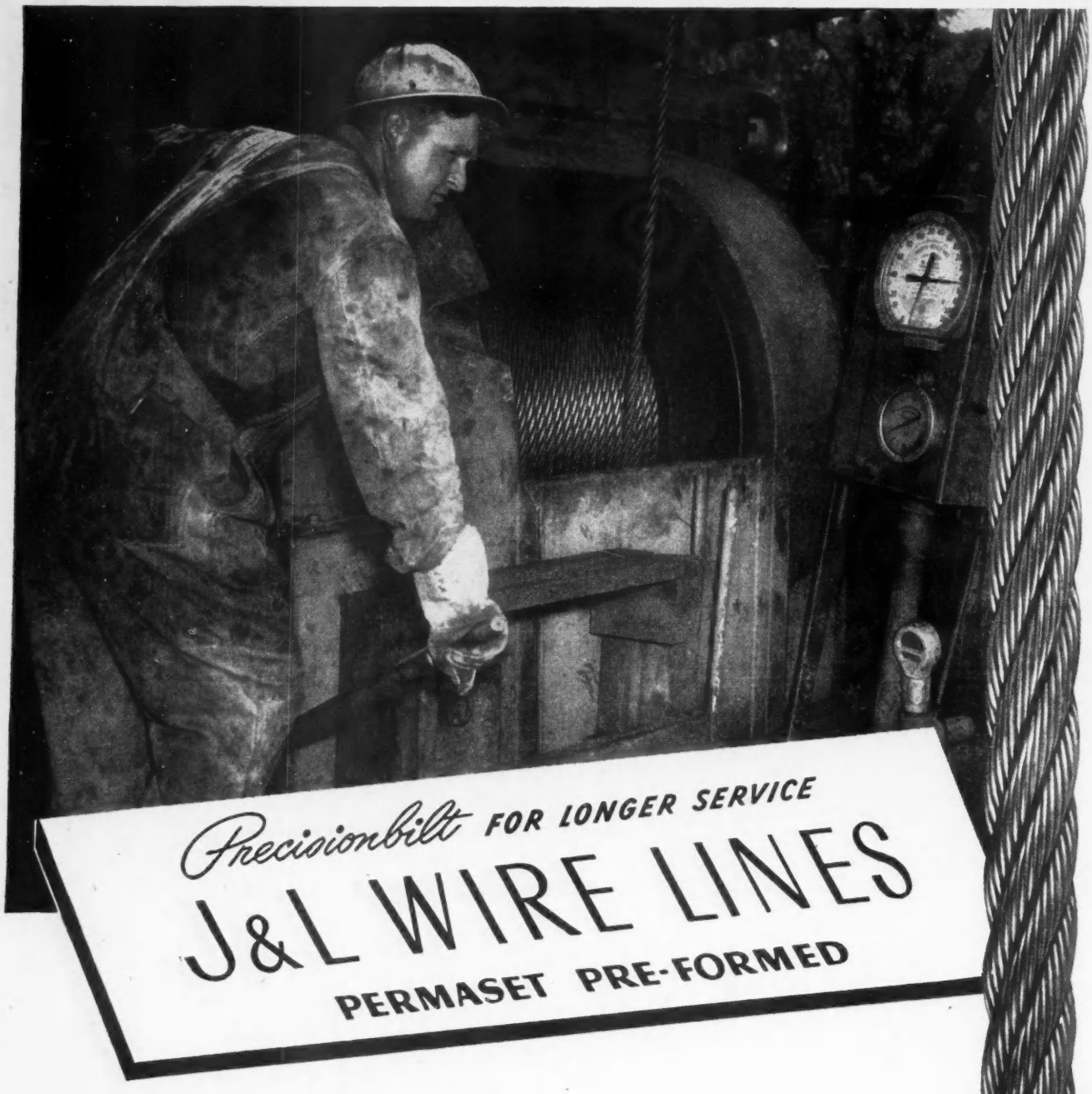

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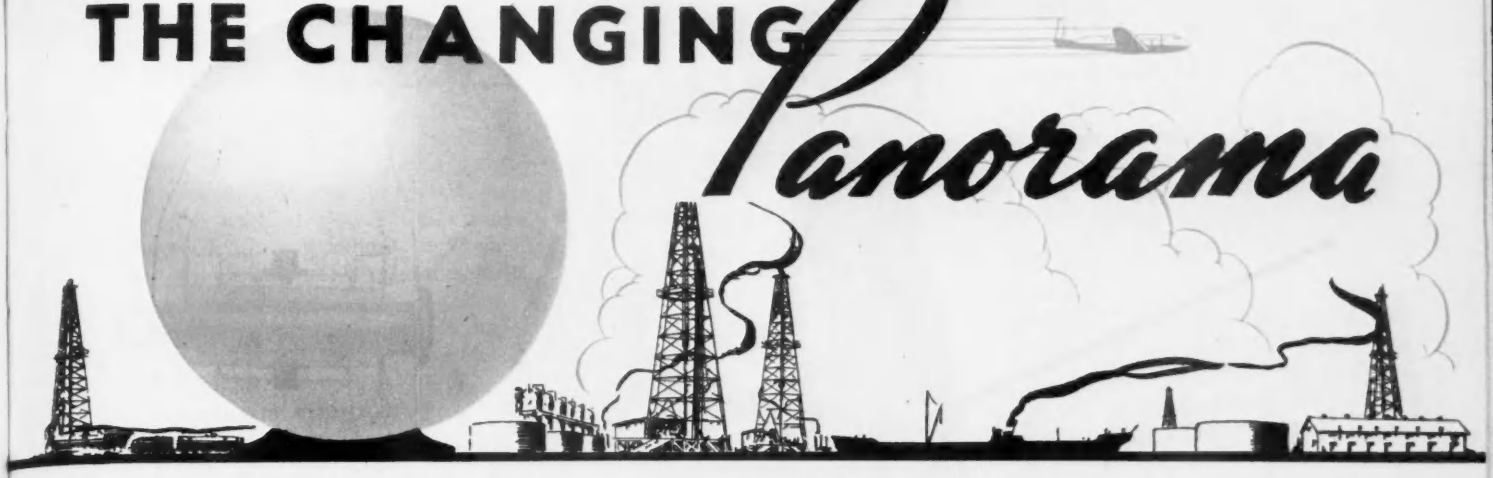


Co-ops Make News At Home and Abroad

CO-OPS are in the news.

Last week's issue of THE OIL WEEKLY revealed that the International Cooperative Petroleum Association had been organized at the Zurich gathering. This $15 million co-op will start operations as soon as ten central organizations sign the articles and subscribe the initial capital of $500,000. Twenty-two organizations have indicated their intention to cooperate, among them trading groups in the United States, Scotland (SCWS), Sweden, France Belgium, China, Cuba, The Netherlands, Norway, South Africa, Australia, Iceland, Argentina, Egypt, Finland, Greece, Italy, Palestine, Philippines, Puerto Rico, Siam and Tunisia. The English CWS at Zurich favored further investigation.

Meantime the United States (this country was given credit in European press reports for sponsoring the creation of the world-wide petroleum agency and having "earned a worthy place among the pioneers") is hearing reverberations of last April's report which "yes and noed" domestic cooperatives and the advantages given them under our statutes.

This report, made by the House Committee on Small Business, Wright Patman, chairman, is being repudiated now by two members of that committee, one of whom said a minority report would have been filed at the time but "we were told the announced report was tentative and we (Representatives Walter C. Ploeser and Evan Howell) decided to wait."

Ploeser fired the first blast, substantiating every criticism that has been made of the Patman defense of cooperative tax freedom. He found that instead of being nominal, the volume of cooperative business aggregates more than $12. He declared that the advantage over tax-paying business is not small and unimportant, that in reality it amounts to a 38 percent differential.

Ploeser said that adoption of Patman's suggestion that all business evade taxes by the cooperative method of paying out its earnings in so-called patronage dividends, would spell the doom of capitalistic enterprise and would destroy the opportunity for Americans to go into business for themselves.

Howell, agreeing with Ploeser, called the committee report "incomplete, and inconclusive" and both promised that the matter will be investigated further when Congress convenes in January.

The National Tax Equality Association announces that it will appear again when the subject is aired in Washington "to tell the whole story of the income tax inequalities that are unfairly destroying taxpaying small business and that are depleting the revenues of government at an ever-increasing rate."

Taxpaying *big* business also is being affected, it might be added.

Damifino!

COMES the Department of Justice of the United States and in a Mother Hubbard suit (remember Jim Ferguson's definition of a "Mother Hubbard"—covers everything, touches nothing!), gets on its horse like the knight of old and rides blithely off in all directions. Comes the Sun Oil Company and demands to know just which direction the bold knight is going, and to what points he is directing his efforts. Comes a scratching of heads on the part of the knight and his squires. He couldn't very well say "Damifino" in view of his dignity, so he asks for a few months to make up his mind!

Several years of government regimentation has made it clear to most of the American people that our economy cannot endure half regulated and half free.
WILLIAM K. JACKSON, *President, Chamber of Commerce of U. S.*

Good Completions . . . Continued Dividends

EFFICIENT completion of oil wells not only pays off today, but brings cumulative dividends months or years hence whenever workovers are required.

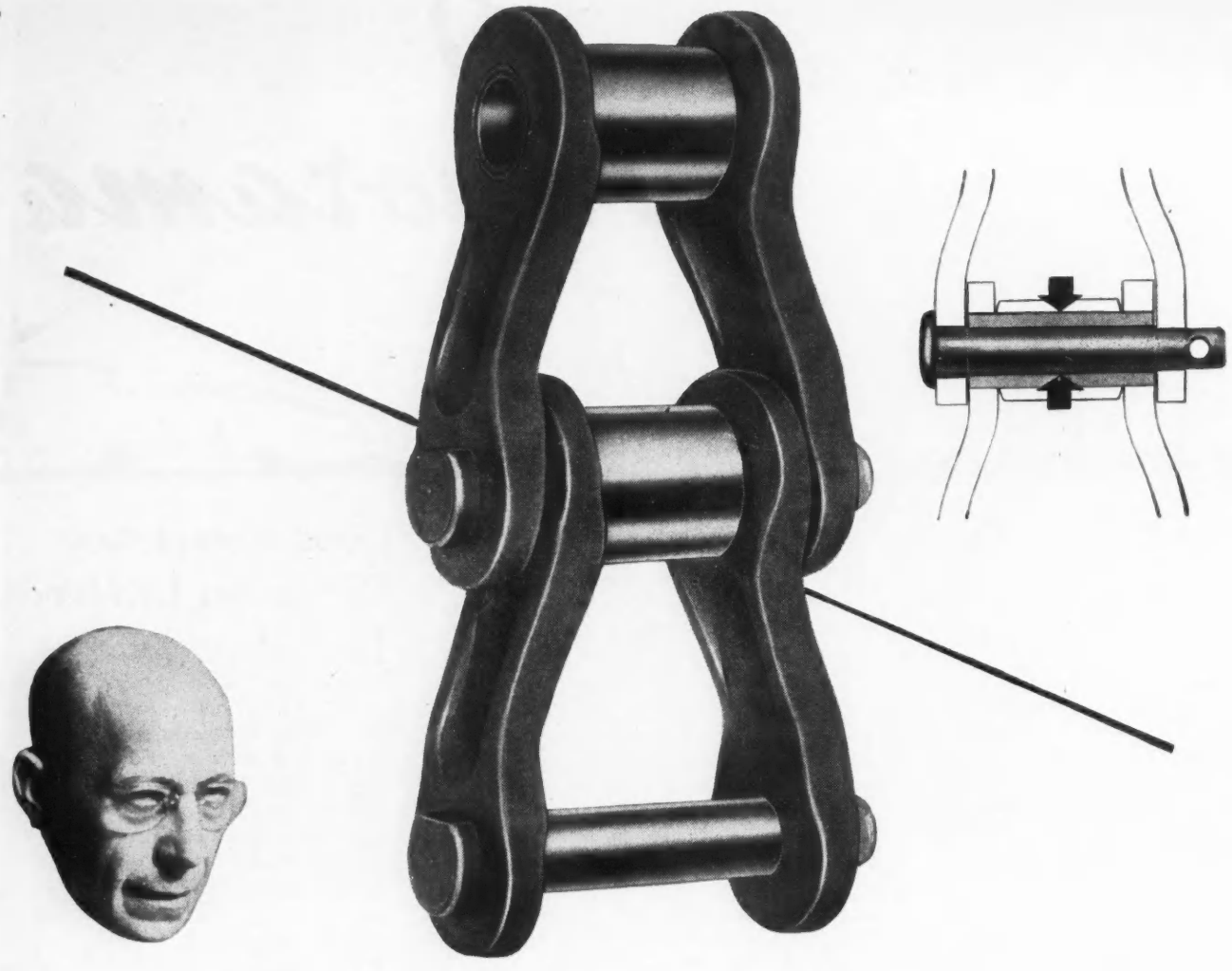
This has been the experience of industry operators who, more or less, have been driven to adoption of better methods by the very good reason that workover contractors or crews can get their job done much faster and better on a well, which in the first place, has been properly completed.

Too many old wells have been found at workover time to be in bad shape and when such conditions are found, it's pretty good evidence that the original completion was inefficient, not well planned. Much workover trouble could have been avoided had there been a thorough understanding of the original completion task and, say for example, better cement jobs performed.

The one silver lining in the whole matter is that mistakes are discovered as tubing is pulled and preparations are made for workover operations and these errors of the past serve as a guide on what NOT to do in the future. Thus completion practices are improved by those operators who are alert to profit by the shortcomings of others.

It is extremely costly, as everyone in the industry knows, for oil operators to shut-in a well for reworking. Sometimes redrilling part of the hole is called for. Even sidetracking has been required to eliminate trouble in cases.

Better cementing practices, detailed study of formation and producing conditions and careful planning today are eliminating much of the trouble which might arise in the future. Truly, the exercise of experience and more care in present well completions will pay off. And, as pointed out, the payoff continues a lot longer than the period immediately following completion.



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The Week's News

WITH recommendations for limitations upon its authority before it, the Federal Power Commission is preparing to write the report it will submit to Congress on its natural gas investigation and necessity for revision of the Natural Gas Act. Story below.

Supreme Court Rulings—The U. S. Supreme Court opened its 1946-47 term with rejection of the file oil cases and receipt of a Special Master's report in the effort of the government to regain possession of Wyoming oil lands leased by The Pure Oil Company. Page 24.

"Mother Hubbard" Suit—The Department of Justice on October 14 was given a 60-day extension in which to answer to the interrogatories of Sun Oil Company in the "Mother Hubbard" suit.

Big Inch Disposed—WAA's interdepartmental advisory committee, split over policy, passes out of the picture and leaves disposal of the Big Inch pipe lines up to the Littlejohn agency. Page 26.

Interior Optimistic—Interior Secretary Krug sees new policy of public hearings on important actions successful in developing satisfactory leasing regulations. Strong man for OGD sought. Krug answers Colley. Stories below.

Justice Inherits Alien Work—The wartime office of Alien Property Custodian has been liquidated and its functions transferred to the Department of Justice, which will take over the licensing of enemy-owned oil and other patents seized during the war. Page 24.

Oil Company Incomes—More than half the corporations engaged in production, refining or transportation of oil had taxable income in 1943, paying Treasury approximately $372,000,000 in income and excess profits taxes.

International Conservation—The Interior Department is working on plans for a UN-sponsored international conference on conservation of natural resources, to be held next year. Page 29.

API Program—Agriculture, industry public relations and the future of the oil industry are given the spotlight in the tentative program announced for the annual API sessions. Page 25.

Texas Mid-Continent Awards—George A. Hill, Jr., and T. E. Swigart were presented with distinguished service awards at the annual convention of the Texas Mid-Continent Oil & Gas Association. Page 24.

State and Association Briefs Oppose Any Possible Extension of FPC Power

Three national oil and gas associations and four state governments have joined with the Natural Gas Industry Committee in recommending amendments to Congress expressly forbidding the Federal Power Commission from controlling production and gathering of natural gas and its end-use (THE OIL WEEKLY, October 14). Included were American Petroleum Institute, Mid-Continent Oil & Gas Association and Independent Petroleum Association of America and the states of Texas, Oklahoma, Kansas and Montana.

API asserted that "production of oil and gas is so closely inter-related that, for many purposes, there can be no true separation of the commodities for different legislative or administrative procedures."

A sound oil and gas policy would be one embracing principle urged during the war by the Petroleum Industry War Council, API said.

Charging that the commission already broadened its field of authority beyond that contemplated by Congress, the industry statements contended that it was never the intent to give the FPC complete authority over every phase of the natural gas industry, which might serve as a springboard for extension of control to petroleum and pave the way for federal regulation of two great industries.

Other statements linked waste of natural gas to the extension of commission authority, on the basis of court decisions, to consider the economic incidents of production and gathering in dealing with rates, and cited the apprehensions of oil companies that the sale of residue gas from cycling plants might make them subject to federal regulation, or that the sale of casinghead gas might bring them under the commission's hand.

Citing conservation, the state of Louisiana, New York Public Service Commission and The Koppers Company recommended that FPC control end-use. However, Louisiana asked that production and gathering facilities be left entirely to state control.

Opposition to such extension of federal control over the oil and gas industry within the state was expressed by the states of Texas, Oklahoma, Kansas and Montana.

Railroad and coal interests, in their brief, claimed that natural gas resources are insufficient to supply present pipe lines for more than a few years and for this reason no further expansion of pipe line systems should be authorized. End-use control also was urged.

More Production Asked

Higher demand for crude during November and December was indicated by nominations filed by operators at the statewide proration hearing held before the Louisiana Conservation Commission last week. All operators present urged that there be no reduction in current allowables, and in most cases an increase was requested.

A letter from Harold B. Fell, vice president of the Independent Petroleum Association of America, however, stated that current allowables are too high, stocks are increasing unnecessarily, and that it was causing a wasteful condition.

Krug Thinks NPC Can Make Real Contribution

Every oil and gas matter within the jurisdiction of the government will be a proper subject for discussion and advice by the National Petroleum Council, Secretary of the Interior J. A. Krug holds, and the restrictions with which the Department of Justice hedged the activities of the council do not tend to lessen its field.

Krug made his views known in a letter to Robert H. Colley, president of The Atlantic Refining Company, following the latter's declination of an invitation to serve on the council.

Krug expressed disagreement with Colley's statement that there is in peacetime no desirable end to be served by an industry advisory council. Colley's assertion that the council can do nothing but make historical studies is "completely untenable," Krug declared.

"The Attorney General's letters specifically authorize not only factual research but also the making of recommendations," he said.

"I have the utmost confidence that the performance of the council and the splendid contribution which I know it will make to the advancement of the national interest will demonstrate conclusively that your misgivings are totally without foundation."

Krug did not press him to reconsider his refusal to serve on the council.

"Outstanding Man" Sought By Krug for OGD Director

Pointing to the Denver hearings on public lands leasing regulations as an example of the Interior Department's new policy of inviting the views of interested persons before taking final action on important projects, Secretary J. A. Krug said last week he was confident that the regulations, when issued,

would meet the approval of the oil industry. From the standpoint of the department's policy, he said, the hearings were very successful.

Krug disclosed that the activities of the Geological Survey and the Bureau of Mines have been clearly defined, to prevent duplication and overlapping, and a continuing review will be conducted.

The inventory of natural resources undertaken shortly after he assumed office should be finished by next summer, and studies of the volume of foreign oil which the United States may have to import in years to come is being made, in cooperation with the Navy Department, he said.

Krug said that the search for a permanent OGD director is being pushed by Acting Director Ralph K. Davies. He emphasized his interest in getting a "real outstanding man" for the job.

Texas Continues Its Fight On Export of Natural Gas

The Federal Power Commission's order of June 6 which permits Reynosa Pipe Line Company to export gas from Texas to Mexico is attacked in a petition filed by the State of Texas with the Fifth Circuit Court of Appeals in New Orleans.

It is understood that procedure will call for a review of the FPC record by the Circuit Court after which time briefs from the complainant and counter briefs by Reynosa may be filed.

Atlantic Coast Test

The first overwater drilling ever attempted along the Atlantic Coast was announced last week by Standard Oil Company of New Jersey which has selected a site in Pamlico Sound off the North Carolina shore. It will be 17 miles from Manteo, N. C., and 32 miles north of Hatteras Light where the company recently plugged a dry hole at 10,054 feet. Water at the site is about three feet deep. Drilling will start when a large sinkable barge, under construction at New Orleans, arrives.

The same company last week began drilling its first exploratory test in Maryland, 3 miles north of Ocean City. Standard of New Jersey holds leases on 80,000 acres of state-owned land in the area of Sinepuxent, Chincoteague and Assawoman bays. A 5000-foot hole is projected, but the test may go much deeper, officials said.

Justice Gets APC

Functions of the Alien Property Custodian, including the licensing of some 45,000 enemy-owned patents seized during the war, have been transferred to the Department of Justice by presidential order.

During the war the APC seized property valued at 300 million, not including patent, copyright and other interests which cannot be evaluated, and there remains between $140 and $180 million of additional property to be taken over.

Wyoming Report Received By U. S. Supreme Court

The Supreme Court last week dealt with a number of oil cases but granted only one review of lower-court decisions sought of it.

The court received the report of a special master in a suit brought by the government to recover oil lands in Wyoming from the state and The Pure Oil Company, its lessee. Exceptions or objections to the report must be filed by December 2. The report held that the state had not acquired title to the land prior to its reservation by the President December 6, 1915, as part of Petroleum Reserve No. 41, and that ownership rested with the federal government.

The only petition for certiorari granted was that of the government, seeking to overturn a decision of the Ninth Circuit Court of Appeals reversing a District Court judgment, representing salary and hospital expenses incurred in treating a member of the armed force injured by a truck of Standard Oil Company of California.

The court declined to review the following cases:

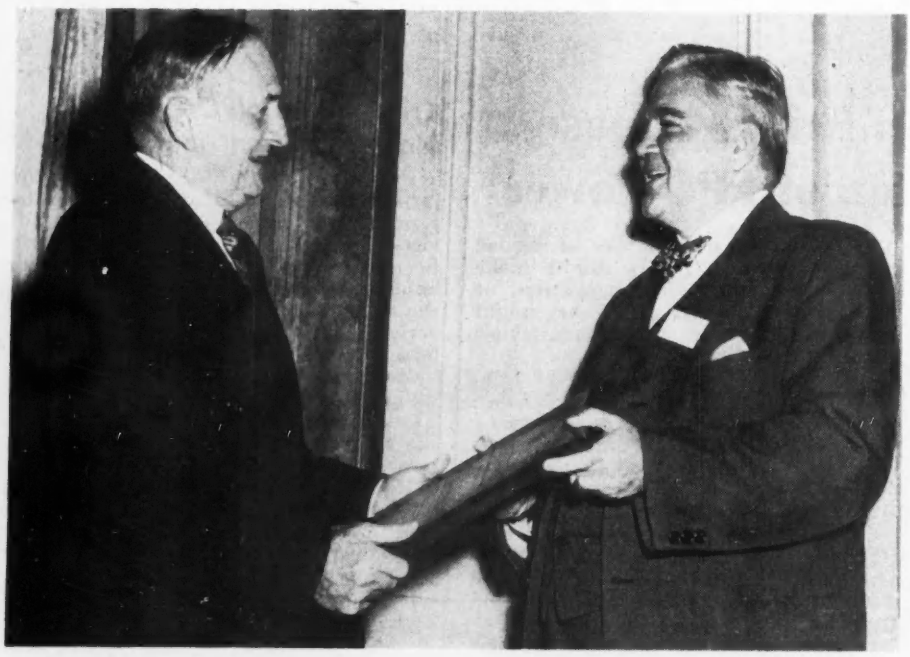
An action of B. C. D. Bynum, et al, to recover from Phillips Petroleum Company from royalties on gas produced under a lease, denied by the Fifth Circuit Court of Appeals.

An effort of Phillips Petroleum Company to overturn a Fifth Circuit judgment of $15,986 and interest in favor of Clay Johnson, for gas produced from a lease.

An appeal by Arkansas Natural Gas Corporation, a holding company, from a Fifth Circuit decision affirming an SEC order requiring it to divest itself of subsidiary corporations engaged in the petroleum business. The holding company system includes Arkansas Fuel Company, Arkansas Pipe Line Corporation, Orange State Oil Company, Petroleum Advisers, Inc., Penn Wyo Trust, owner of Atlantic Oil Company, Columbus Oil Company and Phebus Oil Company; Lisbon Gasoline Company, Inc., and Transark Oil and Gas Company.

A request for rehearing of an opinion rendered last term in a patent case brought by Universal Oil Products Company against the Foot Refining Company, in which evidence of fraud in the original decision had been found.

Mid-Continent Plaques Presented



Two Houston oil men were honored last week by the Texas Mid-Condinent Oil & Gas Association by being presented distinguished service awards. Above, W. R. Boyd, Jr., left, president of API, is presenting the award to George A. Hill, Jr., president of Houston Oil Company of Texas. At right, Maston Nixon, left, of Corpus Christi, past president of the association, is making the award to T. E. Swigart, president of Shell Pipe Line Corporation.

(Photos by Paul Peters)

See Convention Story on Page 30

Price to Speak

Dr. Paul H. Price, State Geologist of West Virginia, will discuss the "Evolution of Geologic Thought in Prospecting for Oil and Natural Gas," before the Houston Geological Society, October 30. The distinguished lecture committee of AAPG is sponsoring the appearance.

Public Relations and Agriculture Get Top Billing at API Annual Meeting

The spotlight will be on agriculture, public relations and the future at the 26th annual meeting of American Petroleum Institute, Stevens Hotel, Chicago, November 11-14, the tentative program announced last week reveals. Addresses of general interest in addition to technical papers are scheduled.

A general session Tuesday evening November 12 will take up the petroleum industry's public-relations program and will hear Claude Robinson, president of Opinion Research; President John J. Pelley of the American Association of Railroads and Robert T. Haslam, vice president of Standard Oil Company (New Jersey) and chairman of the Institute's Public Relations Advisory committee.

Wednesday morning's forum on public relations will find Franklyn Waltman of Sun Oil Company, presiding and will be addressed by Fred Eldean, public relations counselor; Don E. Gilman, executive secretary of Western Oil and Gas Association, and Ralph C. Champlin, director of public relations for Ethyl Corporation. Five oil editors or publishers will serve on a panel to answer questions and discuss points raised.

The second general session, Wednesday afternoon, will hear Secretary of Interior J. A. Krug; H. E. Babcock, farm expert and Cornell University trustee who will discuss the relationship between the American diet and agriculture, industry and labor; and API President William R. Boyd, Jr.

A program of wide public interest will be announced for the Wednesday evening general session.

The final general session, Thursday morning, titled "Looking Ahead" will hear Eugene Holman, president of Standard Oil Company (New Jersey); Ralph T. Zook of Sloan and Zook Company, who will tell how an independent oil producer looks at the future; and J. Howard Pew, president of Sun Oil Company.

The Institute's Agricultural Development Committee is sponsoring the group session on agriculture, Monday afternoon. Chairman George Krieger will preside. It will be addressed by nationally known leaders in the agricultural field—among them Lee Haystead, farm consultant and traveler, and editor of the "Farm Column" for *Fortune;* and John Strohm of the Association of Agricultural Editors, recently returned from a survey trip to Russia.

A taxation group session will be held Tuesday morning and a transportation group session Wednesday morning.

The Division of Production will sponsor three group sessions, viz.: a symposium on secondary recovery Tuesday afternoon, a session on production technology, Wednesday morning and a session on production problems, Thursday afternoon.

Daily throughout the meeting, Institute committees will be in session to make reports and plan future work. There will be more than 100 such sessions.

Registration will be open Monday morning.

Old Ocean Conservation

Old Ocean field (Brazoria County, Texas) operators are printing a unitization agreement, have formed an engineering committee, and bottom-hole pressure surveys on 91 percent of the wells have been conducted, the Texas Railroad Commission was told last week. Additional drilling, deepening and reworking of wells with unit operation in view is in progress, and additions and changes in the field's gathering system are ready. Preparations have been commenced for adaptation of pressure maintenance and hydrocarbon extraction plants to field-wide use and the potential purchaser of plant flash gas will be ready to accept it in November, it was brought out.

Crude Production in United States

(Estimates compiled by THE OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED October 19	October 12
Alabama	1,000	1,000
Arkansas	73,650	73,550
California	879,000	872,400
Colorado	37,900	38,000
Florida	*	*
Illinois	205,100	206,900
Indiana	18,700	18,950
Kansas	267,050	271,300
Kentucky	30,800	31,000
Louisiana	394,700	394,000
North Louisiana	89,100	89,100
South Louisiana	305,600	304,900
Michigan	48,900	46,700
Mississippi	76,650	74,450
Missouri	100	100
Montana	24,100	23,900
Nebraska	750	700
New Mexico	99,600	99,750
New York	14,300	14,200
Ohio	8,200	8,250
Oklahoma	353,650	352,650
Pennsylvania	37,600	37,400
Tennessee	35	35
Texas	2,046,550	2,064,300
Tex. R. R. Comm. Districts:		
Dist. 1—S. Central	19,450	19,425
Dist. 2—Lower Gulf Coast	144,800	146,400
Dist. 3—Upper Gulf Coast	449,300	455,900
Dist. 4—S. West	214,300	216,700
Dist. 5—E. Central	40,000	40,300
Dist. 6—E. Texas Field	316,000	320,300
Dist. 6—Rest of N. East	102,450	102,900
Dist. 7-B—W. Central	33,4500	33,225
Dist. 7-C—West	27,450	27,300
Dist. 8—West	484,700	487,500
Dist. 9—N. Central	129,700	129,400
Dist. 10—Panhandle	84,900	84,950
West Virginia	8,400	7,600
Wyoming	108,200	108,000
Total United States	4,734,935	4,745,135

* Wells shut-in.

Total stocks, foreign and domestic October 12, as reported by the Bureau of Mines were 221,931,000 barrels.

Discussion Panel Features Announced IPAA Program

At the Independent Petroleum Association of America's annual meeting in Fort Worth, October 28-30, a feature will be a panel discussion with 17 nationally recognized operators, experienced in various phases of petroleum activity, participating and answering questions from the floor. Merel Becker of St. Louis, vice president of W. C. McBride, Inc., will preside.

Government officials slated to appear include Charles B. Rayner, State Department petroleum advisor; Col. G. H. Vogel, executive officer of the Army-Navy petroleum board, and Capt. R. E. Wilson, deputy executive officer, USN.

The president's address by B. A. Hardey of Shreveport will be delivered Monday. Luncheon addresses by H. M. McClure of Alma, Mich., president of the National Stripper Well Association, and Beauford Jester, member of the Railroad Commission of Texas and governor-nominee, are slated.

In addition to the government men on the Tuesday program, Lovell Parker, Washington attorney, will discuss "Congressional Policy on Oil Taxes of Great Public Benefit," and James V. Brown, of the Washington office of IPAA, will talk on "Effect of War on Our Domestic Reserves."

Dr. Frank H. Doeterweich, Texas College of Arts and Industries, Kingsville, Texas, will speak Wednesday, with Waston Nixon, of Corpus Christi, the luncheon speaker.

H. B. Fell, executive vice president of IPAA, will address the concluding session on "Effective Cooperation of Associations of Oil and Gas Producers."

Executive committee and officers for 1946-47 will be named Wednesday.

Petroleum Division, AIME Meeting in Los Angeles

The second fall meeting of the Petroleum Division, AIME, to convene in Los Angeles October 24-25, will hear a technical program arranged by the Program Committee under the chairmanship of A. W. Gentry of the Long Beach Oil Development Company.

A pin and certificate of Legion of Honor, class of 1896, will be presented to T. H. Aldrich, Jr., John Gross, and Meade Goodloe by Louis S. Cates, AIME president, who will also give an address on "Foreign Trade Relations." Harvey S. Mudd, past AIME president, will discuss "Recent Observations in Europe and Cypress."

Papers scheduled are as follows:

"Geological Interpretation of Radioactivity Well Logs," by J. E. Kilkenny, Chanslor-Canfield Midway Oil Company; "Hydraulic Drives in the Oil Fields," by Nicholas A. D'Arcy, Charles W. Carter Company; "Volumetric Behavior of Oil and Gas from Several San Joaquin Valley Fields," by B. H. Sage and R. H. Olds, California Institute of Technology; "Some Aspects of High Pressures in the D-7 Zone of the Ventura Avenue Field," by E. V. Watts, General Petroleum Corporation; "Calculated Recoveries by Cycling From a Retrograde Reservoir of Variable Permeability," by M. B. Standing, E. N. Lindlad, R. L. Parsons, Standard Oil Company of California; "Laboratory Results Concerning Selection of Drilling Fluids for Use With Fine Mesh Liners," by John Gates, Shell Oil Company; "Some Theoretical Aspects of Well Drainage and Economic Ultimate Recovery," by Vaughn Moyer, Union Oil Company; "A Review of Geophysical Prospecting Methods, Devices and Procedures," by C. H. Dresbach, Western Gulf Oil Company, and Paul Weaver, Gulf Oil Corporation; "What Management Expects From Engineers," by A. C. Rubel, Union Oil Company, and "What Engineers Expect From Management," by Ernest K. Parks, Consulting Petroleum Engineer.

Property Disposal Board Decision On Big Inch Lines Expected Shortly

A reportedly disgruntled special advisory council to aid War Assets Administrator Robert M. Littlejohn decide the disposal of the Big Inch pipe lines held its second and final meeting last week, minus a representative of the Interior Department.

WAA officials had nothing to say about either dissatisfaction of council members or the resignation of Interior which other sources said was based in part on doubt as to the wisdom of WAA policies, with which the council had nothing to do.

Other agencies also were reported critical of WAA. The War and Navy departments were represented as not interested in the retension of the lines for oil from a military standpoint, while the Federal Power Commission assumed the role of an observer only, since if the lines are sold to a gas company it will have to pass on their operation. The Department of Justice previously had declined to name a representative.

With failure of the attempt to enlist the support of other government agencies behind its policies, WAA consideration of the pipe lines now is in the hands of the Real Property Disposal Board, revamped last week to make it independent so that no member of the WAA real property staff now serves on the group.

Harry E. Pollock of Asheville, N. C., former Pittsburgh industrialist who served with the Army Engineer Corps during the war, was named board chairman, other members of which are Louis H. Bean, construction and realty expert formerly with RFC; William Quaid, retired executive vice president of Gibraltar Fire and Marine Insurance Company of New York; Dan W. Eastwood, for three years chief investigator of the House Small Business Committee; Samuel J. Cole, previously on the board; Malcolm J. Miller, formerly with the Department of Agriculture; Felix J. Shaffner, formerly with OPA.

This board, after considering the 16 proposals, is expected to make a decision in about two weeks.

One reason for disinclination of WAA officials to talk was seen in protests which reached them following publication of a report that the utilities branch would recommend to the Special Advisory Board that the lines be sold to Big Inch Oil, Inc.

Other bidders were reported highly critical, contending that better offers were received for the lines for natural gas use, and it was on the point of the use to be made of the systems that the council split.

Interior is believed to favor use of the lines for natural gas on the ground of conservation. The department is said to be somewhat concerned over the flaring of West Texas gas which might be marketed if pipe lines were available.

WAA spokesmen point out that the Surplus Property Administration adopted the policy that retention of the lines in oil use was most desirable from the standpoint of national security, and that is believed to be the sentiment in Congress. On the other hand, it is admitted that the government should seek to recover the maximum amount for all surplus war facilities sold, which in this case would mean sale of the lines for natural gas.

Permian Basin Line To Connect Arizona

Preliminary surveys and cost estimates have been completed for the construction of a refinery at Phoenix, Ariz., with a trunk line connecting the Permian Basin sector of New Mexico and West Texas. Phoenix Refining Company and Phoenix Pipe Line Company, organized by Phoenix and Kansas City interests, have been incorporated to carry out the projects, which involve the installation of a 10,000 barrels daily capacity refinery and a 600 mile 8-inch trunk line, using four stations.

Arizona is one of the few states without a refinery or production, and its petroleum requirements are largely supplied by California, New Mexico, Texas and Colorado plants by tank cars and trucks. The proposed refinery would supply the state with about one-third of its motor fuel requirements.

Phoenix participants include R. H. Hawn, who has been active in developing production in Texas; Ray Wayland, Herbert R. Askins and Charles L. Strauss, the latter an attorney. The Kansas City group includes J. Sargent McGuire, industrialist and Hal Lebrecht, banker.

Frank E. Richardson, Kansas City consulting engineer, was engaged to prepare the survey on the pipe line and cost estimates.

Block 12 Field Connection Scheduled by November 1

Texas-New Mexico Pipe Line Company is constructing a 13-mile combination 6- and 8-inch crude oil pipe line extension from the Dollar Hide field, southwest Andrews County, West Texas, to the northeast and to the newly discovered Block 12 producing area that is without a connection. Completion date for the line is scheduled to be November 1.

The Block 12 field was discovered by The Texas Company's (was Atlantic Refining Company's) University 1-P, completed August 4 this year. Production comes from the Clear Fork (Tubb) lime of Permian age. Four producers have been completed.

Southern Union's Trunk Line Capacity Increased

Southern Union Gas Company, Dallas, will provide a substantial increase in the capacity of its natural gas trunk line system in Northwestern New Mexico through installation of a loop, while it will extend to the Los Alamos atomic bomb center to provide fuel for the federal installations and domestic consumers.

Bids have been asked for the immediate construction of a 10-mile 10-inch loop, parallel to the company's original 8-inch trunk line from Barker Dome and Fulcher Basin fields, San Juan County, to Sante Fe and Albuquerque. The loop, located south from Farmington, will boost daily capacity to 30 million feet.

Right-of-way is being cleared by Fredell Construction Company, Houston, for Southern Union's trunk line extension from Santa Fe to the Los Alamos project, involving 22 miles of 8-inch transmission line.

Southern Union is building a 4 mile 4-inch loop out of Carlsbad to increase gas deliveries to a potash mining plant.

Southern Natural Would Increase Line Capacity

Southern Natural Gas Company has filed an application with FPC for authority to construct additional compressor units and loop lines at cost of $8,343,000, to increase its capacity by 30,000 Mcf daily, permitting it to serve Chattanooga, Tenn., and Lexington, Miss.

The company plans to build 139 miles of 20 and 22-inch main line looping and 15½ miles of branch loops and step up capacity at four of its main lines and certain branch line compressor stations.

Extension of the Southern system to new markets in Alabama and Georgia is being studied.

Natural Gas Pipeline Company of America has been authorized to deliver natural gas to Western United Gas and Electric Company for the account of the Chicago District Pipeline Company. The arrangement will enable Western United to convert a segment of its service from mixed to straight natural gas.

Contract Let for Plant

Stanolind Oil & Gas Company and associates have awarded contract to C. F. Braun & Company, Los Angeles, for the erection of a 90 million cubic foot capacity natural gasoline plant in the Slaughter field, West Texas. This project was authorized last April and producers that will participate on a production basis are: Stanolind, The Texas Company, Magnolia Petroleum Company, Honolulu Oil Corporation, Devonian Oil Company, and George P. Livermore, Inc. Arrangements have been completed for the sale of the plant gas residue to El Paso Natural Gas Company, while the production will be handled by Stanolind Pipe Line Company's 16-inch crude outlet for the field.

Texas Petroleum Starts Shipments From Delta Amacuro Area, Venezuela

The Texas Petroleum Company has started shipping its first oil from the Delta Amacuro region of extreme eastern Venezuela. This petroleum is produced in the company's Tucupita field situated immediately north of the town of Tucupita on the Manamo river, one of the principal tributaries of the Orinoco River system. Shipments will be made from facilities made available on the river, and will be handled by a small tanker recently moved to the area by the Company. This craft is expressly suited to navigation of the tortuous stream channels and the relatively shallow Gulf of Paria.

Discovered early in 1945, the Tucupita field now has nine producing wells of which four were completed during 1945, and five added up to the latter part of September this year. Thus far only one rig has been in operation throughout the life of the field, but another is on the ground and may be placed in service shortly. No dry holes have been drilled in the field, the only dry hole in the area being a wildcat 20 kilometers (12½ miles) north of the field drilled early in this area's operations. Production is from Miocene sand corresponding apparently to the sand in the Pedernales field in the northern part of the Delta Amacuro territory, and is found to a total depth of 5600 feet. Average thickness of sand is just less than 250 feet.

Shipments are starting at the rate of approximately 5000 barrels daily, and oil is being delivered to Guiria terminal of Creole Petroleum Company where it is purchased by the Standard group. This volume will continue to go to the purchasing company, but as the amount of shipments increase, the excess will be handled by the producers themselves. Oil is asphalt base crude of gravity between 16 and 17 degrees and is in firm demand at this time.

The acreage situation is expected to cause an accelerated development program in the field which should result in substantial gains in production within a relatively short time. While the discovery operators hold a solid block in the presently productive area, the western limits of the block are bounded by the Manamo River itself, and Creole Petroleum Company owns offset acreage upon which it now plans to start drilling wells to match Texas Petroleum Company's drilling along the river.

Tibu Cretaceous Tests Important to The Barco

Colombian Petroleum Company's K-21, important deep test on the southwest flank of the Tibu field in northeastern Colombia, is still conducting tests which may prove production from the Cretaceous, the same formation in which Shell's prolific Western Venezuela wells recently have been completed. Preliminary tests showed that the well probably could be finished as a commercial producer, but the company apparently intends making a thorough test of all possible pay sections before putting it on production.

This well, started a year and a half ago as one of a series of deep tests on the Tibu structure, was designed to give data by which the prolific Cretaceous production may be evaluated. After a number of delays, the well was bottomed at 10,876 feet, as the deepest test of the area, and one of the deepest in Colombia, going through the Cretaceous to basement formation. The testing started with an open hole test between the casing seat at 10,555 feet, and total depth, and the well was brought in flowing several hundred barrels of oil daily, but started making some water and was killed to test at higher points. During the testing it was found that the cement job was not complete to calculated heights behind the casing, so a number of squeeze cement jobs have been made to isolate the various points of porosity and saturation, the highest being at 10,068 feet. Other tests, through casing perforations, will be resumed as soon as cement has set.

Most of the present production of approximately 9100 barrels daily from the Tibu structure comes from wells completed in Tertiary sands, only one well producing from Cretaceous, and making high gravity oil at a rate of about 625 barrels daily, through a small choke. Definition of an extensive Cretaceous producing reservoir would be of utmost importance to the Barco concession.

Houston Nomads Told About The Spread of Communism

Col. George E. B. Peddy, Houston attorney who served as a military governor in Europe, told Houston Nomads at their meeting last week that he is in favor of war and "the sooner the better" if it takes that to preserve American institutions and the American way of life, including free enterprise. He thought the only way to live peaceably alongside totalitarian countries is for the democracies to stay strong enough to "keep them convinced that we can whip them."

Oil men back from South America reported campaigns against American interests and thought counter-propaganda is needed. These same men also said that the east flank of the Andes offers tremendous oil possibilities and that some countries, notably Peru, are revising petroleum laws to permit entry of private operators.

E. B. Fouks and Hans C. Ross, Los Angeles Nomads, reported on the growth of Petroleum Production Pioneers, recently organized in California. Spread to other oil centers was forecast.

International visitors included Boris G. Pavlov of the Soviet Purchasing Commission and G. R. Valet, SN. Marep, Paris, France.

Russia Likely to Pass Up Conservation Conference

Interior Department officials are working on plans for the proposed international conservation conference to be held under auspices of the United Nations Social and Economic Council late in 1947.

While the idea is to spread the gospel of conservation of natural resources, the major problem would be conservation of non-renewable resources, particularly oil.

So far, there has been no indication how the subject is viewed by other oil-producing nations, most of which are producing for markets other than the United States and are anxious for and in need of the money derived from the sale of their petroleum. Russia, for instance, is not seen in Washington as participating in any conservation movement on an international scale.

France's New Pipe Lines

Construction of new pipe lines and a new absorption plant will increase the gas production of the St. Marcet field, southern France from its present 10 million cubic feet daily to 42 million cubic feet daily, Jean de Vries, director, Regie Autonome des Petroles, said last week.

De Vries was in Houston making final plans for the purchase of equipment to be used in the construction of the plant. The new carriers will run from Tarbes to Pau, St. Marcet to St. Girons, Tarbes to Pierre Fitte and a second line from St. Marcet to Toulouse. All construction is expected to be completed by the end of 1947.

Sulphur in Mexico

Mexican Gulf Sulphur Company and American Sulphur Company, S. A. (a Mexican corporation), have completed four important sulphur wells in the province of Vera Cruz, Mexico.

Eugene L. Norton, president of Mexican Gulf Sulphur, said the wells have proved up what is apparently a large new deposit of salt dome sulphur, similar in nature to the large deposits being mined on the Texas and Louisiana Gulf Coast.

French Visitors

Lucien Dumas of Paris, France, president and general director of Societe Nationale des Petroles du Languedoc Mediterraneen, and J. A. Beaubois, assistant to Dumas, were in Houston last week inspecting new oil field equipment.

Dumas' company operates on a large concession in southern France where several tests are currently drilling.

Economic Mission

An economic mission from Venezuela is conferring with the U. S. Geological Survey and Bureau of Mines experts on oil problems in that country which might be helped by drawing on U. S. experience, Secretary of Interior J. A. Krug disclosed last week.

Texas Mid-Continent Meet

Oil and gas association warned of federal encroachment; Shield re-elected president

By WELDON B. HILL, Staff Writer

Warnings of the always imminent threat of some groups in Congress to propose legislative restrictions adversely affecting the oil industry were sounded last week at the annual meeting of the Texas Mid-Continent Oil & Gas Association in Houston.

The most serious threat was cited by Clint C. Small, Austin attorney, as the Federal Power Commission's "well planned campaign to gain regulatory control of natural gas from the time gas leaves the producing formation until it is consumed at the burner tip."

Declaring that FPC is perhaps best equipped to penetrate the wavering front line of the industry, Small said "the control desired includes control of price paid the producer."

Consequences of federal control of the price paid for natural gas, he declared, include waste, depressed price, stifling of the market, retarding pipe line construction and destruction of free enterprise.

The association adopted a resolution asking Congress to amend the Natural Gas Act to limit FPC's jurisdiction to the interstate trunk line transportation of natural gas and the sale after such transportation is completed for resale for public consumption. The resolution further set out that the act be amended so as to expressly deny the commission any authority to regulate "directly or indirectly production and gathering of natural gas, the sale including the price of natural gas sold by the producer or gatherer and the end use of natural gas."

Changing Oil Policy

Russell B. Brown, general counsel, Independent Petroleum Association of America, declared that "our national oil policy is undergoing changes." There are several federal departments claiming the right to plan the nation's petroleum future and are "in violent competition with each other," he declared.

"The one thing on which they seem to unite is the belief, or at least the expression, that our own resources are going to be exhausted soon and that we must depend on foreign resources," Brown said.

"The domestic industry is not decaying as some suggest. We are quite capable of providing our major requirements of petroleum from our own sources."

Brown asserted that "if it is to be government policy to have a dozen or more kibitzers shouting conflicting advice and instructions to the industry and the public, agreeing only on their predictions that the domestic producing industry must fail, then the domestic industry is in for real trouble."

He said he believed that the condition of loose, irresponsible talking can easily influence the fate of the Anglo-American Oil Agreement.

Brown said the recent proposal by government officials to throw the pending agreement into the arena of international politics and of control by some international body tends to destroy it.

The delegates were warned by Cedric Foster, radio commentator, that "there are subversive elements within, as well as without, this nation who are working day and night to destroy the fundamental principles upon which this republic was founded.

"It is incumbent upon all right-thinking citizens to know their neighbors and to combat every tendency shown by any one of them to talk against, or to undermine, our principles of government," Foster said.

No Taxes Needed

Citing the strong financial position of the state government and viewing the large increase in taxable industrial properties brought about by the war, Fred W. Shield, association president, declared that "Texas needs no more taxes."

Shield, however, said he was cognizant of the fact that certain agencies and groups within the state do need more funds and should have them. These include school teachers and the highway department.

The Texas petroleum industry's share in all the state's business and property taxes was reviewed by Shield.

John S. Redditt, of the State Highway Commission, called on the delegates to support the Good Roads Amendment to be voted November 5 which he said would "put road building in Texas on a sound, permanent financial basis."

A report of the theft prevention committee was presented by Paul W. Pitzer, chairman.

The role Texas oil played in bringing victory to the United Nations in World War II was cited by W. John Kenney, assistant Secretary of the Navy. Kenney spoke in the absence of James Forrestal, Secretary of the Navy.

The association's distinguished service awards were presented to George A. Hill, Jr., president of Houston Oil Company of Texas, and to T. E. Swigart, president of Shell Pipe Line Corporation, both of Houston.

W. R. Boyd, Jr., president of the American Petroleum Institute, cited Hill's part in guiding the oil industry through its many stormy battles with federal bureaus.

Swigart's achievement in successfully handling the transportation of oil by pipe line during the war was outlined by Maston Nixon, past president of the association, in his presentation talk.

Resolutions were adopted paying tribute to a number of former officials of the Texas and general Mid-Continent Oil & Gas Association who have died since the November, 1945, directors' meeting in Fort Worth in November, 1945. Those memorialized were Judge J. C. Hunter of Abilene, president of the general association; George C. Gibbons of Dallas, executive vice president of the Texas group; E. L. Smith, Sr., former president of the Texas body; William Pullman, office and membership secretary of the Texas organization; Mel B. Davis of Pampa, former vice president for the Panhandle section of the Texas group, and A. J. Cunningham of Houston, president of Standard Oil Company of Texas and a director and executive committeeman of the Texas association.

Officers Elected

Fred W. Shield of San Antonio, was re-elected president of the Texas Mid-Continent Oil & Gas Association at its annual meeting in Houston.

Other officers, all reelected, were Eugene McElvaney of Dallas, treasurer, and Andrew M. Howsley of Albany, general counsel. Vice presidents reelected were Claud B. Hamill, Houston, Gulf Coast District; B. G. Byars, Tyler, East Texas District; J. L. Collins, Corsicana, East Central Texas District; J. P. Coleman, Wichita Falls, North Texas District; J. R. Phillips, Borger, Panhandle District; B. L. LeFever, Big Spring, West Texas District; and Al Buchanan, San Antonio, Southwest Texas District.

Twenty-one new directors were added to the board. They are, Bernard Hilburn, John P. Morgan, E. L. Smith, Jr., Edwin B. Cox, Jr., and Grady Vaughn, Jr., of Dallas; Clyde Broussard, Tom Reed and Waldo Wilson, of Beaumont; W. D. Lane, Midland; R. L. Wheelock, Jr., Corsicana; Lester Clark and Bill Pitzer, of Breckenridge; W. A. Landreth, W. A. Moncrief, Jr., and L. G. Neely, of Fort Worth; Davis Collett, Joe Russell, Jr., John Blaffer and W. W. Fienniken, of Houston; Boyd Street, Graham; Arthur Seeligson, Jr., and Tom Slick, of San Antonio; George Dimmock, Wichita Falls; and Billy Davis, Pampa.

Annual Tax Forum

State and local tax trends will be discussed December 16-18 when the Annual Advalorem Tax Forum, sponsored by the Mid-Continent Oil & Gas Association, will be held at the Plaza Hotel, San Antonio. Marshall L. Edwards and H. W. Pryor, chairman and vice chairman of the association's State & Local Taxation Committee will preside.

Gas Marketed Production Reaches New High in 1944

Wartime demands for natural gas raised the marketed production in 1944 to a new record high of 3,711,039 million cubic feet, an increase of 9 per cent over 1943, the Bureau of Mines reported.

Texas production increased 15 percent to 1,525,515 million cubic feet, or 41 percent of the national output, compared with 39 percent in 1939.

No other state exceeded 35 percent of the Texas output, Louisiana, second, producing 534,688 million cubic feet, and California, third, 502,017 million cubic feet. The only other states to produce more than 100,000 cubic feet were Oklahoma, 310,888 million; West Virginia, 181,452 million and Kansas, 157,733 million.

River Bed Lease

Mineral leases on two tracts of Rio Grande River bed lands were awarded to S. L. Miller of San Antonio last week by the Texas School Land Board. The contract provides for a one-fourth royalty plus a bonus of $562 on the 225-acre tracts.

The board specified directional drilling so as to preclude river pollution.

Mid-Year AAPG Meeting

Abstract of papers to be given at Biloxi gathering shows a wide range of subjects

THE mid-year meeting of the American Association of Petroleum Geologists will be held this week, Thursday and Friday, at Biloxi, Miss., at which time papers abstracted below will be presented. Governor Thomas L. Bailey will welcome the nearly 800 geologists and wives who have made reservations and responses will be given by F. F. Mellen, president of the Mississippi Geological Society and Earl B. Noble, president of AAPG.

Cenozoic Deposits of Mississippi and Adjacent Areas

By GROVE E. MURRAY, JR., Magnolia Petroleum Company, Jackson, Miss.

Twenty thousand feet or more of Tertiary and Quaternary sediments are present in the central Gulf region of southern United States. They comprise a large, seaward-thickening, wedge-shaped sedimentary complex (Gulf Coast Geosyncline) composed predominantly of deltaic deposits. Thin, relatively uniform and widespread, marine strata are present between the thick deltaic deposits and on the seaward edges of the deltaic masses.

The Tertiary is represented by four, perhaps five, epochs of deposition, which are, in ascending order, Paleocene, Eocene, Oligocene, Miocene, and Pliocene. Each successively younger series of rocks occupies an outcrop position progressively nearer the present coastline. Similarly, each younger rock series has been downwarped less by the thick, geosynclinal seidmentary load and, therefore, has less southwest regional dip. The Midway (Paleocene), Claiborne (middle Eocene), Jackson (upper Eocene), and Vicksburg (Oligocene) groups each contain important marine units. The Wilcox (lower Eocene), Miocene, and Pliocene are primarily deltaic deposits; they constitute the thickest Cenozoic sedimentary accumulations in the eastern Gulf region.

The Quaternary is represented by two epochs of deposition, the Pleistocene and Recent. These deposits are characteristically fluiviatile gravels, sands, silts, and clays; they border or fill alluvial valleys and were deposited during or subsequent to Pleistocene glacia- tion.

Status of Micropaleontology in the Eastern Gulf Region

By HENRY V. HOWE, Louisiana State University, Baton Rouge, La.

Since the paper by Finch in 1824, which initiated the study of the Cretaceous and Tertiary stratigraphy of the eastern Gulf region, some 200 papers dealing with the micro-fossils of Mississippi, Tennessee, Alabama, Georgia, Florida and South Carolina have appeared. Of these, at least 160 deal primarily with foraminifera, 21 with ostracodes, 11 with bryozoa, and 4 with otoliths. In these papers nearly 700 species of foraminifera, 150 species of ostracodes, 580 species of bryozoa, and 23 species of otoliths have been described as new from these states. Hundreds of other species whose type localities lie in other states or countries have been reported. The formations whose type localities have been reasonably thoroughly studied for their microfaunal content are indicated. Some suggestions of needed studies are made.

The Formation of Evaporites Under Marine Evaporation Conditions

By PAUL WEAVER, Gulf Oil Corporation, Houston.

Sediments consisting principally of salt, anhydrite and gypsum, potash, and certain types of limestone and dolomite have a wide areal extent in certain stratigraphic units and are of persistent a character as many other sedimentary deposits. Depositions of these beds occurred in large bodies of water in an environment where evaporation exceeded precipitation and where the temperature and other climatic factors were so controlling that they impressed upon the beds special traits which have continued through subsequent geologic time, and a study of these depositions, therefore, enables us to deduce the paleo-geography and paleo-climate by applying physical and chemical tests to the sediments.

The primary purpose of this paper, therefore, is to show the combined use of physics, chemistry, and geology in the understanding of a particular environment, and to stimulate the geologist to the utilization of other scientific data to better understanding of sedimentary processes. The paper begins with a discussion of the warming of a body of water by solar energy, and the change in evaporation with increase in salinity up to the point where water has been saturated as to one or more compounds, and then the order in which precipitation takes place as to different minerals. Actual sediments containing these precipitates are then discussed in order to show the time involved in their formation and the physiography and climate of the basin in which they were formed. The changes which take place in these sediments after burial and particularly the ones immediately following deposition, are discussed.

The paper does not go into any detailed sections in any particular salt series, except that may be necessary to demonstrate some particular points, but from the general principles of this type of sedimentation it is believed that geologists working in areas where there are sediments of this kind, will understand better the particular areas where they are making correlations by sub-dividing the sediments of this class.

Stratigraphy and Petroleum Geology of Black Warrior Basin, Mississippi and Alabama

By F. F. MELLEN, Mellen and Monsour, Jackson, Miss.

A great triangular area of approximately 35,000 square miles of normal Paleozoic sediments occupies a large portion of Northern Mississippi and Northwestern Alabama. The Black Warrior Basin, as its extension is herein proposed, is bounded on the east by the southwesterly plunging Appalachian folds; on the south and southwest by the southeasterly plunging Ouachita mountain system; and on the north by the high Ordovician areas in central and western Tennessee. A soft cover of Mesozoic and Tertiary sediments ranges from a feather edge at the Paleozoic outcrop in the northeastern part of the area to around 6000 feet in central Mississippi. Several hundred test wells have penetrated Paleozoic sediments ranging in age from Cambro-Ordovician to Pennsylvanian. A combined total thickness of sediments penetrated by these wells is about 12,000 feet. Other than a test well in Webster County, Mississippi, which questionably encountered acidic igneous rock, no igneous or metamorphic rocks have been found in the basin. In the Ouachita boundary area south and southwest of the basin, basaltic intrusions of probable Mesozoic age are common in more or less metamorphosed sediments of Paleozoic age. Commercial gas production from Silurian, Mississippian, and Pennsylvanian rocks has been insignificant; but the numerous shows of gas and oil, combined with many sharp unconformities and marked lateral lithologic changes, together with many known faults and anticlinal structures, make the Black Warrior Basin one of the large remaining undeveloped potential oil and gas-producing provinces of the North American continent.

Surface Occurrence of Cretaceous Beds in the Southeastern States

By WATSON H. MONROE, Geological Survey, Department of the Interior, Washington, D. C.

The Cretaceous sedimentary rocks of the eastern Gulf region crop out in a crescentic band around the southwestern end of the plunging Appalachian Highlands in a belt 500 miles long and up to 75 miles wide. This maximum thickness at the outcrop is estimated to be about 2100 feet.

The oldest beds of the eastern Gulf Coastal Plain, the Vick formation, crop out in a small area in central Alabama. The age of the Vick is uncertain, being post-Paleozoic and pre-Tuscaloosa. It is probably Jurassic or Lower Cretaceous.

Above the Vick formation the Upper Cretaceous formations can be correlated fairly closely with the Texas section, the sequence being divisible into several groups of related formations.

The formations equivalent to the Woodbine of Texas include the Cottondale, Eoline, and possibly the Coker formation, the three lower formations of the Tuscaloosa group. These crop out in an arc extending from Marion County in northwestern Alabama to the Coosa River Valley in east-central Alabama.

The formations equivalent to the Eagle Ford formation are the Gordo formation at the top of the Tuscaloosa group and the McShan formation, formerly considered the lower part of the Eutaw formation. These extend from the Tennessee River Valley on the north into Georgia on the east.

The Austin equivalents include the restricted Eutaw formation and the basal formations of the Selma group, the Mooreville chalk and its sandy equivalents, the lower part of the Coffee sand in northeastern Mississippi and southern Tennessee and the Blufftown

formation in eastern Alabama and western Georgia.

Above the beds of Austin age the Cretaceous sequence in the eastern Gulf region may be divided most naturally into two sequences; the lower correlated with Taylor marl and the lower part of the Navarro group and the upper correlated with the upper part of the Navarro.

The lower of these two sequences consists of the Demopolis chalk, its sandy northern partial equivalent of the Coffee sand, and its eastern equivalent, the Cusseta sand, and the Ripley formation, which overlies all three units. This stratigraphic sequence extends from southern Illinois to west-central Georgia.

The upper beds of the Cretaceous include the Prairie Bluff chalk and its two sandy equivalents, the Owl Creek formation to the north and the Providence sand to the east. These formations extend from southern Tennessee as far at least as central Georgia, broken in west-central Alabama by overlap by the overlying Midway beds.

Near the ends of the crescentric belt the squence of deposition is broken by extensive overlaps. As may be expected, internal, progressive overlap is common in all the formations, but extensive overlap indicating crustal warping is especially notable at the base of each of the larger groups discussed above.

General Geology and Occurrence of Oil in Florida

By E. D. PRESSLER, Humble Oil & Refining Company, Tampa, Fla.

The eastern portion of the Gulf of Mexico Basin is divided into provinces on the basis of stratigraphy and subdivided further on the basis of its major structural features. The general area is considered to be a part of the Gulf of Mexico Sedimentary Basin. The Apalachicola embayment of south Georgia and west Florida has a maximum sedimentary fill of approximately 15,000 feet of clastic sediments, the South Florida embayment has a maximum fill of non-clastic sediments approaching 20,000 feet, and the area of the Great Bahama Bank is considered to be underlain by a section in excess of 10,000 feet. Anticlines may be the most prevalent type of structure of both embayments, though faulting is probably present, and conditions are favorable for the formation of stratigraphic traps. Oil production has recently been developed from the Lower Cretaceous on the Florida segment of the South Florida embayment, and additional drilling development is under way. Gravity and core drill are the most widely used methods of prospecting, and it is indicated that additional experimental work is necessary to develop proper seismograph technique.

Mesozoic Igneous Rocks of the Northern Gulf Coastal Plain

By C. L. MOODY, The Ohio Oil Company, Shreveport, La.

Study of the outcrop areas of igneous intrusions in the Texas, Arkansas, and Georgia portions of the Gulf Coastal Plain furnish clues which simplify interpretation of igneous rocks found in deep well samples in the Mississippi embayment. Many of the known centers of later Mesozoic igneous activity, both outcropping and buried, are apparently the sites of ancient volcanoes which furnish to the depositional basins significant amounts of pyroclastic debris now in part preserved in the early and middle Gulf Cretaceous strata. Dikes transect the oldest known sedimentary rocks in the vicinity of the eruptive centers. The oldest igneous rocks of the Coastal Plain may bear a Triassic date; the youngest were emplaced in late Austin or early Taylor time.

Geology of West Tepetate Oil Field, Jefferson Davis Parish, Louisiana

By FRED W. BATES and JAY B. WHARTON, Consulting Geologists, Lafayette La.

The West Tepetate oil field, located in the Louisiana Gulf Coast area, was discovered by the Barnsdall Oil Company and Vincent and Welch in 1944. The presence of the structure was first suggested in 1930 by torsion balance exploration conducted by Vincent and Welch and was subsequently disclosed by various seismograph surveys during 1941 and 1944. The producing section lies below the Heterostegina Zone in the Middle Miocene, and consists of nine oil and gas-bearing sands ranging from 7600 to 9500 feet in depth. The structure is a gentle, irregularly elongate dome, believed to have been produced by the deep-seated intrusion of salt, though none has been encountered to date. There is about one hundred feet of effective closure at the producing levels. Only one fault has been proven, though a major regional fault, downthrown to the south, is indicated by seismograph to the north of the field, probably being a westward extension of the similarly-bounding fault in the Tepetate field. The productive limits thus far established enclose some 1400 acres, offering a reserve of between 30 and 40 million barrels.

The Delhi, West Delhi and Big Creek Fields

By A. M. LLOYD and R. B. TOTTEN, Sun Oil Company, Monroe, Louisiana, and Dallas.

The Delhi, West Delhi and Big Creek fields are in northeastern Louisiana and production is from Tuscaloosa in Upper Cretaceous and Paluxy in Lower Cretaceous. Sands within a common reservoir constitute the most prolific producing zone. These sands consist of a basal Tuscaloosa sand and various underlying Lower Cretaceous sands in contact at the unconformity. Other producing sands in the Tuscaloosa are lenses in the Marine Tuscaloosa above the basal sand. The Big Creek field produces from several lenticular sand members in the Marine Tuscaloosa with the basal sand having been overlapped and not being present.

As of July 1, 1946, 236 wells had been drilled in the Delhi, West Delhi and Big Creek fields of which 197 were oil producing, four gas, and 35 were dry and abandoned. The present productive acreage approximates 7000 acres. The fields are in stages of development and the ultimate productive acreage is as yet unknown. The estimate of total recovery is in excess of 200 million barrels of oil at the present stages of development.

The Delhi field was drilled on a seismic structure but subsequently it was found that the accumulation of the oil was due to a stratigraphic trap with structure playing but a small part.

The Cranfield, Adams and Franklin Counties, Mississippi

By GEORGE ZEBAL, The California Company, Natchez, Miss.

The Cranfield field, 16 miles east of Natchez, Mississippi, was discovered in October, 1943, by The California Company's National Gasoline Company of Louisiana 1. Though completed as a Wilcox 5800-foot zone oil well, gas-distillate sands were tested in the Tuscaloosa Basal Sand horizon. The deep Ella G. Lees 9 well was completed in June, 1946, as a dry gas producer in the Paluxy formation.

Deepest penetration into the Cranfield structure encountered the Comanchean Paluxy formation, Trinity group, and Washita-Fredericksburg unit. The Gulf series includes the Tuscaloosa formation, divisible into three members; the shale and marl facies of the Austin unit; and the Selma group. The Eocene groups, Midway, Wilcox, Claiborne, and Jackson are represented by 6650 feet of marine sediments.

The Basal Sand reservoir, containing 65 feet of oil and gas-distillate sand, has 320 feet of effective closure. A cycling project is planned for this reservoir. The mid-Milcox 5800-foot sand has a maximum oil-bearing column of 40 feet and an average sand thickness of 11 feet.

The structure is an oval dome almost unbroken by faulting. Geographical location, among other factors, favors the movement of a deep-seated salt mass as mode of origin.

Other Papers

A brief summary of the more important historical events in the geology of Mississippi was given by Urban B. Hughes, consulting geologist, Laurel, Miss.

C. W. Alexander, Dixie Geological Service and R. M. Harris, Harris and Payne, Jackson, Miss., in a paper on "Subsurface Occurrence of Cretaceous Sediments of Mississippi" say that these sediments comprise the most significant group of beds as related to the search for and production of petroleum in Mississippi.

The new map of the Tertiary formations of Georgia will be exhibited, with a brief discussion of the stratigraphy by F. Stearns MacNeil, U. S. Geological Survey, Dothan, Ala.

A series of cross-sections will be presented, correlating the Cretaceous beds of East Texas through North Louisiana and South Arkansas into Mississippi by Roy T. Hazzard, Gulf Refining Company, Shreveport, La., whose paper covered subsurface correlations.

A. M. Current of The Carter Oil Company, Jackson, Miss., will discuss "Geology of the Gilbertown Field, Choctaw County, Alabama" and will show that production in this area is controlled largely by faulting. The faults, with their relation to production in both the Selma Chalk and the Eutaw formations will be discussed as will be possibilities of additional chalk as well as Tuscaloosa production.

The Tinsley field, Yazoo County, Mississippi, discovered in 1939 will be discussed by F. R. Shroeder and J. B. Storey, Union Producing Company, Shreveport, La., and Jackson, Miss. The structure here is a faulted anticline and the structural features will be shown by structure and isopach maps and geological cross sections. Stratigraphy, reservoir conditions are summarized.

Tom McGlothlin, Gulf Refining Company, Laurel, Miss., will give a brief discussion of the Heidelberg field, including some general statements regarding average cost of wells, number of wells, history of development, etc.

Temperature

WELL LOGGING

Part 1

Heat Conduction

By HUBERT GUYOD
Well Logging Consultant, Houston

THE first physical property measured in bore holes is probably temperature. As early as 1869 Lord Kelvin took temperature readings in a well 350 feet deep by using a thermocouple. Many other similar measurements were made during the following years.

Notwithstanding these early investigations, temperature data have not been used extensively as yet for the logging of formations traversed by a well. The main reason therefor is that in most instances temperature measurements cannot compete successfully with the other methods of investigation. Only in a limited number of cases, such as the location of oil and gas reservoirs in cable tool wells, the location of cement behind pipes, and a few other minor problems, are temperature measurements used at present in bore holes. It is felt, however, that this method could be more widely applied if its possibilities were better understood.

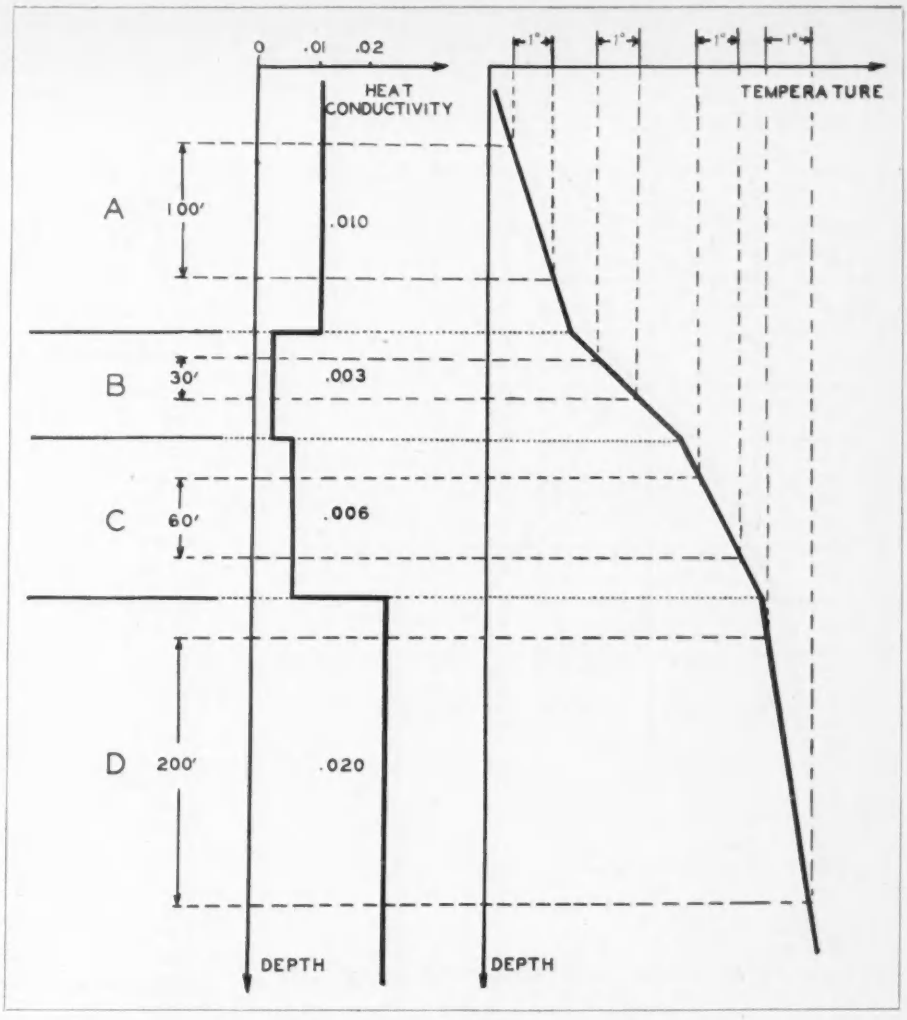


Figure 1-1. Temperature distribution in horizontal beds.

Earth Temperature

Considerable evidence indicates the presence of an extremely hot core in the center of the earth. Whether all the heat radiated by the earth's surface is coming from the core alone or part of it is produced by radioactivity disintegration has not been established with certainty. Although this question is of interest to the geologist, it need not be discussed here because the general temperature distribution in sediments is probably not much dependent upon the nature of the heat generating process.

Heat may be transferred from one point to another by the three different following mechanisms:

conduction
convection
radiation.

Conduction is the transfer of heat from one part of a medium to another part of the same medium without appreciable displacement of particles. Only conduction has usually to be considered in the study of the earth's crust temperature as the other processes have only a negligible effect.

Fourier's Law

There are many analogies between the flow of a liquid through a permeable medium, the flow of electricity through a conductor and the flow of heat by conduction through a solid body. In particular, the mathematical solutions of the problems involved in these three branches of physics are identical and many formulas obtained for one of them can be used for the others by simply translating each symbol into its proper analogue.

The correspondence between these three different sciences is of great significance because it frequently helps understanding the mechanism of an unfamiliar system by comparing it with a different system which is better understood. For instance, everyone is familiar with the classical method of explaining the flow of electricity in a wire by comparing it to the flow of water in a pipe.

The fundamental law of heat conduction is Fourier's law, which is analogous to D'Arcy's law in hydrodynamics, and to Ohm's law in electricity. The parallels between these laws are summarized in Table 1.

Fourier's law states that the instantaneous rate of heat flow through a section is equal to the product of the three following factors:

1. The area A of this section (taken at right angles to the direction of flow).
2. The temperature gradient dT/dx, which is the rate of change of temperature, T, with respect to the length of path, x.
3. A proportionality factor, K, known as heat conductivity (or thermal conductivity) of the medium.

Analytically expressed, Fourier's law is as follows:

$$\frac{dQ}{dt} = KA\,\frac{dT}{dx} \qquad (1)$$

where dQ is the amount of heat flowing in differential time dt.

In the case of the earth's crust, the heat transferred through any section is independent of time and equation (1) can therefore be rewritten:

$$\frac{dT}{dx} = \frac{c}{K} \qquad (2)$$

where C is a constant for the section considered (except at depths less than 100 feet which are the seat of diurnal and annual variations).

The value of the factor C varies from one point of the earth to another according to the geometry of the formations. In horizontal sediments, C is constant over considerable distances

ELECTROLYTIC scale models are widely used at present for investigating the performance of petroleum reservoirs. The same method can be used also for investigating the temperature distribution in the earth's crust. How this is done is explained in this article.

Research for this series was sponsored by Halliburton Oil Well Cementing Company, Duncan, Okla.

This is the first of a series of seven articles.

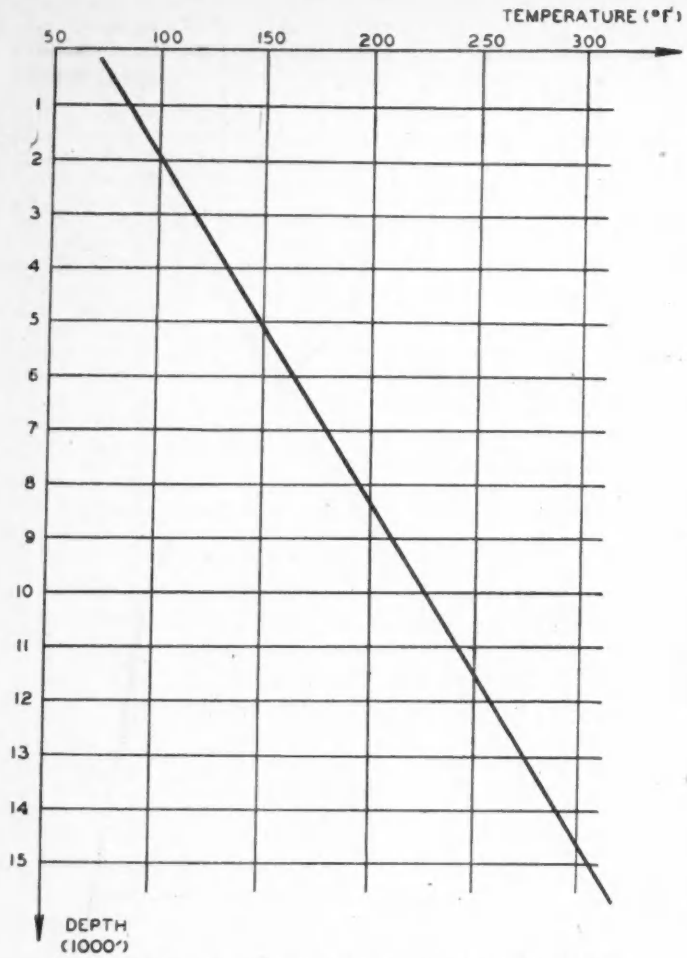


Figure 1-2. Approximate ground temperature in the Gulf Coast.

when the surface of the ground and that of the basement rock are horizontal also. Under these conditions the temperature gradient in any given bed is constant and proportional to the reciprocal of the heat conductivity of said bed, the factor of proportionality being the same for all beds.

In geology, the reciprocal gradient is frequently used instead of the gradient. The reciprocal gradient is the vertical distance between two points having a temperature difference of one degree. Evidently, in parallel media the reciprocal gradient in a bed is proportional to the heat conductivity of said bed.

It is customary to consider only vertical gradients, such as those which are determined by taking temperature measurements in bore holes. This will be done also in this work, unless specified otherwise.

Horizontal Beds

It is obvious from the foregoing discussion that, in an alternation of horizontal uniform sediments, the isogeotherms — or surfaces of equal temperature — are parallel horizontal planes. Furthermore, in any given uniform bed these planes are equidistant. Their distance is proportional to the bed conductivity.

If the geologic section comprises four beds, A, B, C, D, for example, whose heat conductivities are 0.010, 0.003, 0.006 and 0.020, respectively, the vertical temperature distribution in the ground is as shown by the graph to the right of Figure 1-1. If there is, for instance, a temperature change of one degree over a vertical distance of 100 feet in bed A, the same temperature change will be observed over distances of 30 feet, 60 feet, and 200 feet in beds B, C, and D, respectively.

In any uniform horizontal formation the temperature T at a given point is given by the following formula:

$$T = T_o + bd \qquad (3)$$

where T_o is the mean temperature of the ground close to the surface, b the temperature gradient in the formation, and d the depth of the point of observation. This formula is valid at any point below 100 feet provided the surface of the ground and the basement rock are reasonably horizontal.

In practice, a formation is never uniform. Equation (3) can nevertheless be used to estimate the temperature at a given depth provided the average value of the temperature gradient is used for b. In the Gulf Coast, for instance, when the sediments consist of an alternation of almost horizontal shales and sands the following formula can be used far from intrusions:

$$T = 70 + \frac{d}{64}$$

(T in degrees Fahrenheit and d in feet). The resulting temperature graph in terms of depths is shown on Figure 1-2.

TABLE 1

Parallels Between Heat Conduction, Hydrodynamics and Electrodynamics

Heat Conduction	Hydrodynamics	Electrodynamics
Heat flow per unit time: $(F=\frac{dQ}{dt})$	Fluid output or input per unit time: $(F=\frac{dQ}{dt})$	Current intensity: $(I=\frac{dQ}{dt})$
Heat conductivity (K)	Permeability (K)	Electrical conductivity (C)
Temperature (T)	Pressure (P)	Potential (V)
Temperature gradient (dT)	Pressure gradient (dP)	Potential gradient (dV)
Fourier's law: $F=K\frac{A}{dx}dT$	D'Arcy's law: $F=K\frac{A}{dx}dP$	Ohm's law: $I=C\frac{A}{dx}dV$

A = Path cross section. dx = Path length.

Heat Conductivity

It has been seen above that the temperature in the ground is controlled primarily by the heat conductivity of the formations. To understand how the temperature is distributed it is therefore advisable to have some knowledge of the thermal properties of the materials found in the ground.

The heat conductivity of a material depends upon the following factors:

conductivity of the solid particles,

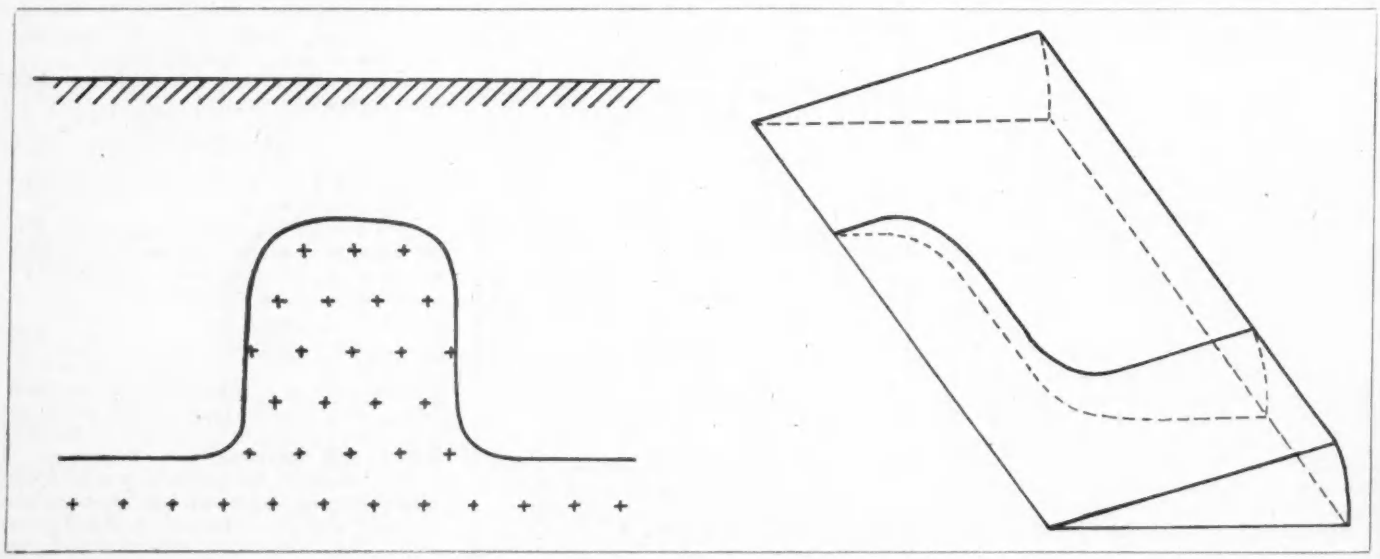


Figure 1-3. Salt dome (left) and its model (right).

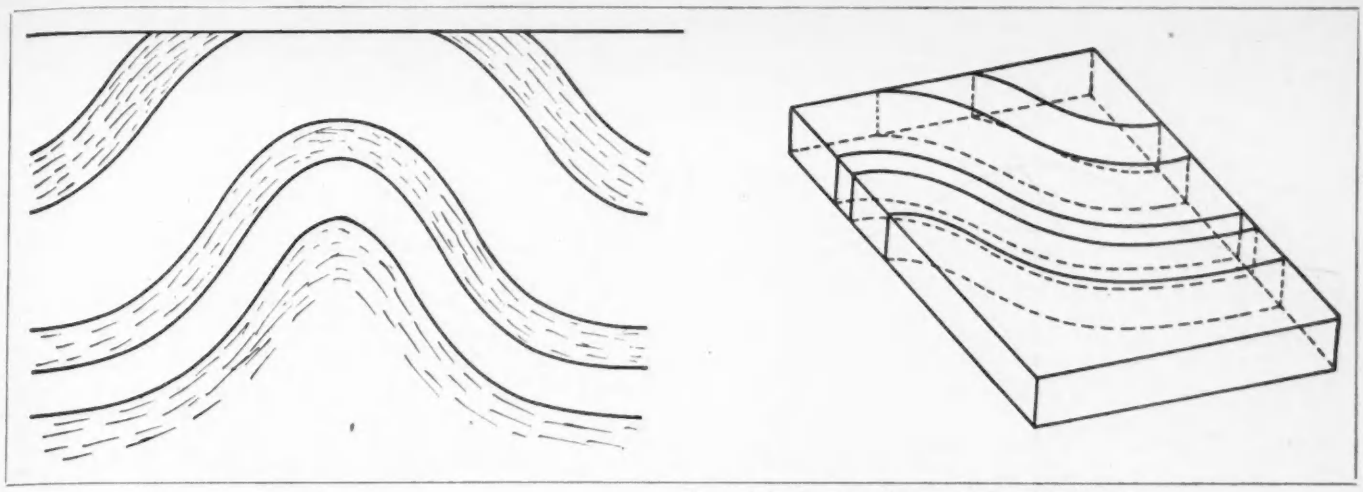


Figure 1-4. Anticline (left) and its model (right).

geometry of the solid particles,
conductivity of the fluids comprised
between the solid particles.

The heat conductivity of quartz is greater than that of calcite, while the latter is greater than that of the usual silicates.

In heterogeneous substances the heat conductivity increases with compactness. For instance, igneous and metamorphic rocks are usually better conductors than sediments.

The nature of the fluids present in the pores is also an important factor. If the material is dry and very porous the heat conductivity is considerably less than if the pores contain water (sediments). This is due to the fact that air is a much poorer heat conductor than water. Oil and natural gas are also poor conductors; therefore, the heat conductivity of petroleum-bearing reservoirs should be smaller than that of the same reservoirs when they contain only water. Unfortunately, the difference is rather small, as will be explained later.

Approximate conductivity of common substances and sediments is given in Table 2. The data for sediments are not always reliable because a few are based on values obtained from samples not entirely saturated with water (outcrops). More accurate conductivity values can be obtained when temperature data are available from wells which are in thermal equilibrium. This procedure gives excellent relative conductivity values for sediments which are reasonably horizontal and far from salt or igneous intrusions. Approximate absolute values can be obtained by using the following formula:

$$K = \frac{1}{2} G_R \times 10^{-4}$$

where K is the heat conductivity (C.G.S. units), and G_R the reciprocal gradient (vertical distance, in feet, for a temperature change of one degree Fahrenheit). This formula gives an average conductivity of 0.004 in nonconsolidated formations and of 0.006 in older formations.

Sands usually have a significantly greater heat conductivity than shales, possibly because of the rather high conductivity of quartz. For instance, in a well in thermal equilibrium located near the Dickinson oil field (Galveston County, Texas), temperature measurements have given a reciprocal gradient of 92 feet in sands and 42 feet in shales, corresponding to an approximate heat conductivity of 4.6×10^{-3} and 2.1×10^{-3}, respectively. In a typical West Texas well, the reciprocal gradient in lime was found to be 130 feet, giving a heat conductivity of about 6.5×10^{-3}.

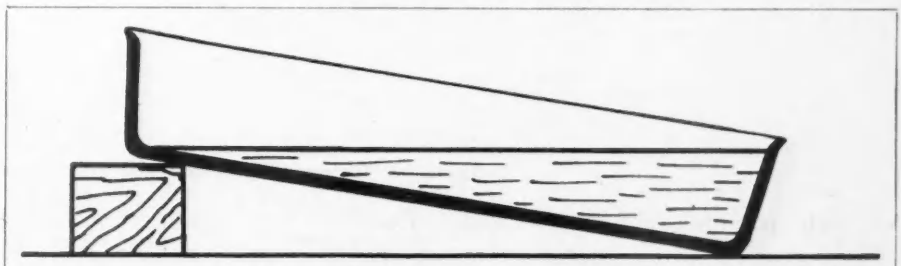


Figure 1-5. Tray for salt-dome investigations.

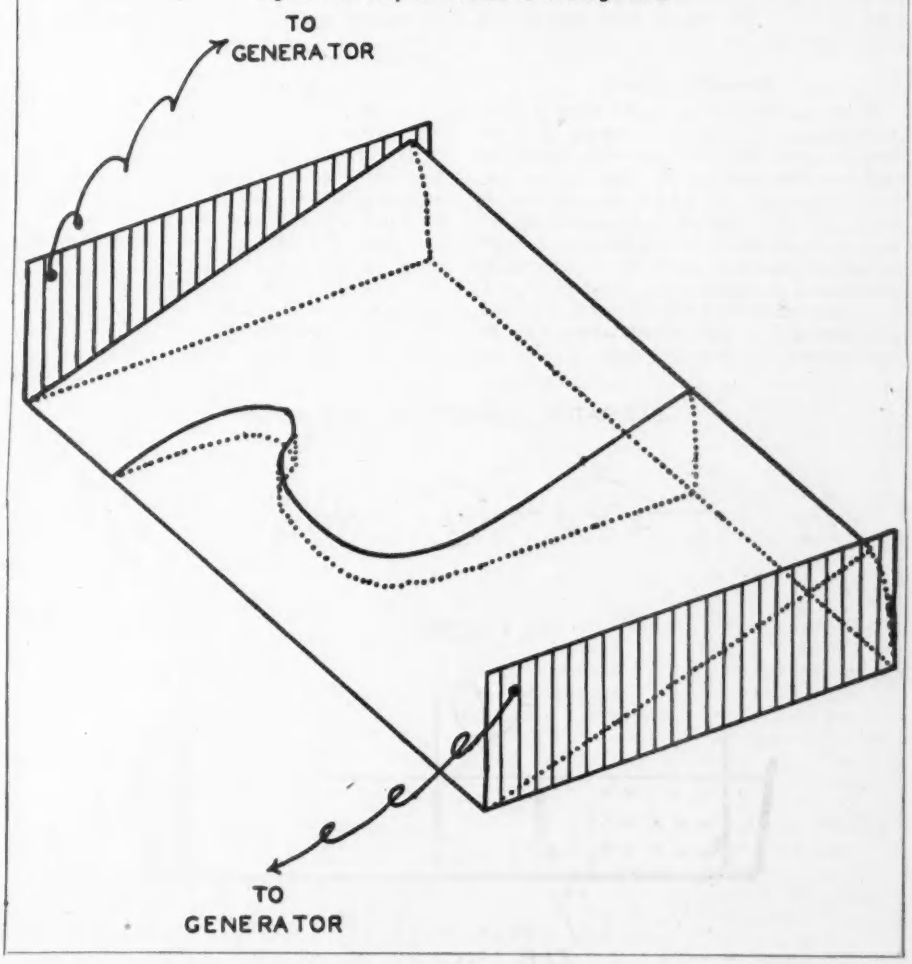


Figure 1-6. Flat electrodes simulating horizontal ground and horizontal basement rock.

The specific heat of sediments and igneous rocks varies chiefly with the amount of free water contained. The lowest values—about 0.2—are found in rocks which do not contain any water (granite), while the highest values—about 0.7—are exhibited by sediments

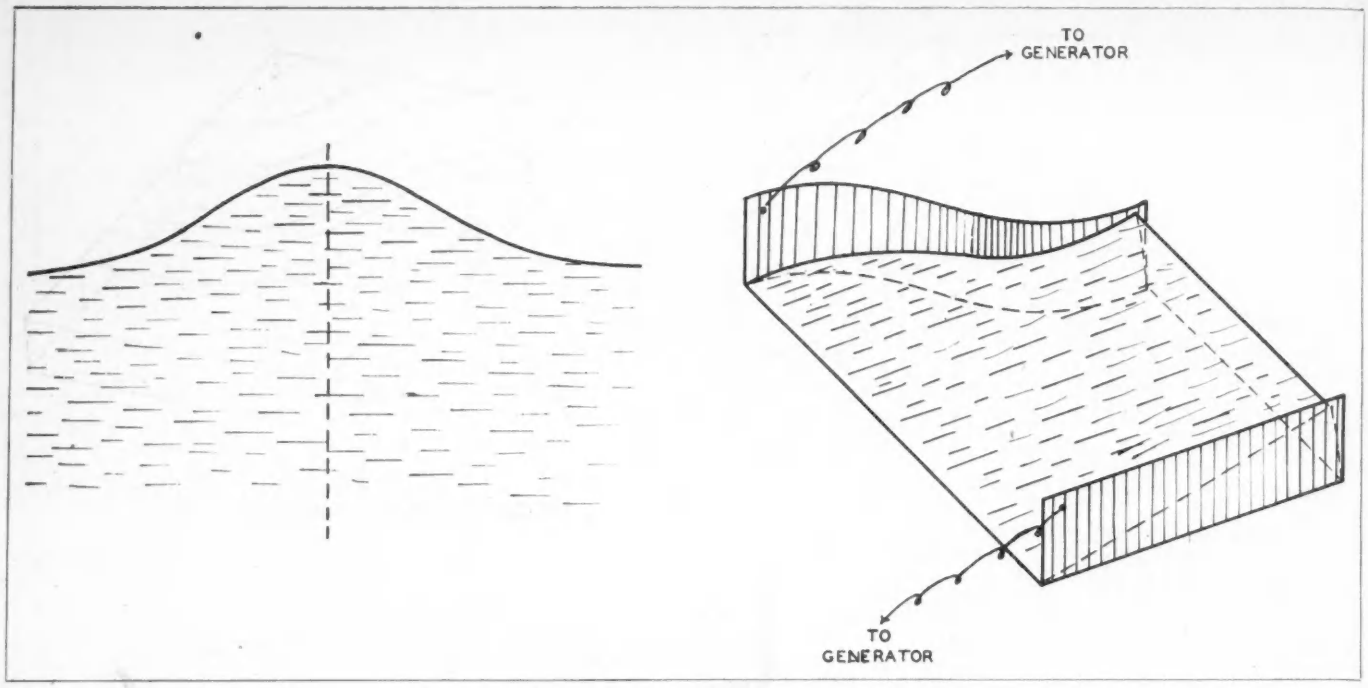


Figure 1-7. Topographic high (left) and its model (right).

of high porosity (non consolidated sands).

The temperature distribution in the earth's crust is independent of the specific heat of the formations unless the latter are not in thermal equilibrium.

Complex Cases

It has been seen that the temperature distribution in parallel media follows very simple rules. When the basement rock or the surface of the ground are not horizontal, or when the sediments are tilted, the factor C of equation (2) varies from point to point in a very irregular manner and it is therefore impossible to solve this equation for T, the temperature of the ground. In such complex cases the temperature can be determined accurately only by direct measurements. However, when the nature of the formations and their approximate shape and dimensions are known, fairly good temperature determinations are frequently possible by using either one of the two following indirect methods:

measurements on an electrolytic model,
graphical means.

The temperature distribution in non-uniform materials, for instance in sediments lifted by an intrusion, is a function of the following factors:

heat conductivity of the sediments and of the intrusion,
geometry of the intrusion,
angle of formation dip,
surface topography,
miscellaneous minor influences.

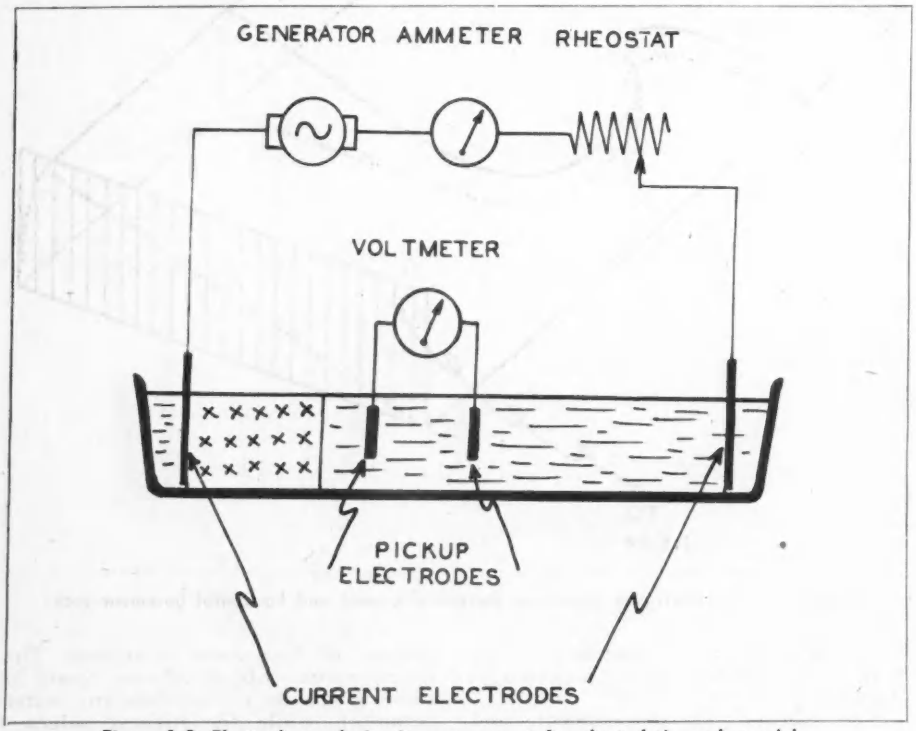


Figure 1-8. Electrodes and circuit arrangement for electrolytic scale models.

The graphical method is usually not applicable to such complex cases and will therefore not be discussed here. On the other hand the electrolytic model method is universal and very simple to apply. Many of the data which will be discussed in this work were obtained with electrolytic models.

Electrolytic Models

The applicability of an electrolytic model to the investigation of heat flow in three-dimensional media is based on the three following facts:

1. The flow of heat through solid bodies is analogous to the flow of electricity in conductive materials: it is therefore possible to use an electric flow through conductors to simulate a flow of heat through the earth's crust.
2. A model may have any size provided it is geometrically similar to the object it simulates. In practice, a model whose dimensions are of the order of one or two feet may frequently be used successfully to

TABLE 2
Heat Conductivity of Common Substances
(x 10^3 C.G.S.)

Metals	Copper	1000
	Iron	160
	Silver	1000
	Steel	110
Minerals	Calcite	10
	Pyrite	25 to 40
	Quartz	6 to 30
Non-Sedimentary Rocks	Basalt	5 to 7
	Granite	5 to 8
	Slate	6
Sediments	Chalk	2 to 3
	Clay	2 to 3
	Coal, lignite	0.5 to 1
	Dense limestone	5 to 8
	Rock salt	8 to 15
	Sand, porous lime (water)	3 to 5
	Sand, porous lime (oil or gas)	3⁻ to 5⁻
	Shale	2 to 4
Fluids	Air	0.05
	Natural gas	0.1
	Crude oil	0.3
	Water	1.4
Miscellaneous	Concrete	1 to 2

simulate several cubic miles of formations.

3. The electrical conductivity of the elements of the model may have any value, but their ratio must equal the thermal conductivity ratio of the corresponding elements of the ground.
4. The temperature distribution in the ground is simulated by the potential distribution in the model.

A model designed according to the foregoing principles gives perfect temperature data if the geometrical and thermal characteristics of the formations to be investigated are known. When a few of these characteristics can be only approximately determined, one has to use a model which does not simulate perfectly the actual conditions to be investigated. The data obtained under this condition are nevertheless useful if used in a qualitative manner. In particular, it permits to understand the basic influence of almost any factor upon the temperature distribution in the ground.

A comprehensive study of the temperature in the earth's crust by the electrolytic model method would require several man-years but would probably be of great value. For the present work only those measurements which were necessary for a good understanding of the temperature distribution in sediments were investigated, in particular the effect of the following factors:

salt domes,
salt ridges,
intrusions having a low heat conductivity,
formation dip,
superficial relief,
petroleum reservoirs,
ore deposits,
faulting.

Actual measurements on more complex cases, in particular on combinations of several of the preceding factors, were not carried out because reasonably correct qualitative data can usually be obtained by simply altering adequately the temperature patterns obtained for the elementary cases.

Many Simplifications Permissible

Theoretically, a model must be geometrically similar to the object it simulates. However, if the object is symmetrical about a plane or about an axis, only an adequate part of the model may be used rather than the complete model. For instance, many of the formations listed above, are of revolution about an axis. Under this condition it will usually suffice to carry the electrical investigation on a sector only. For example, the temperature distribution in and about the salt dome whose cross-section is shown on Figure 3 can be fully investigated by simply using the model shown to the right of the figure. This is of great practical importance because the preparation of the models is thus considerably facilitated. Furthermore, measurements can be carried out easily inside the formation, as will be apparent from an examination of Figure 1-3. These inside measurements would be difficult to make in a simple manner if complete models were used. The data obtained for one face of the wedge shown to the right of Figure 1-3 are applicable to any other section of the formation passing through the axis of symmetry.

A similar simplification can be made for the study of an anticline for example. Because such a structure is symmetrical about two planes at right angles, only a half slice of the formation need be investigated (Figure 1-4). Of course, if the object to be investigated does not possess any symmetry, it is necessary to use a full model if accurate results are desired.

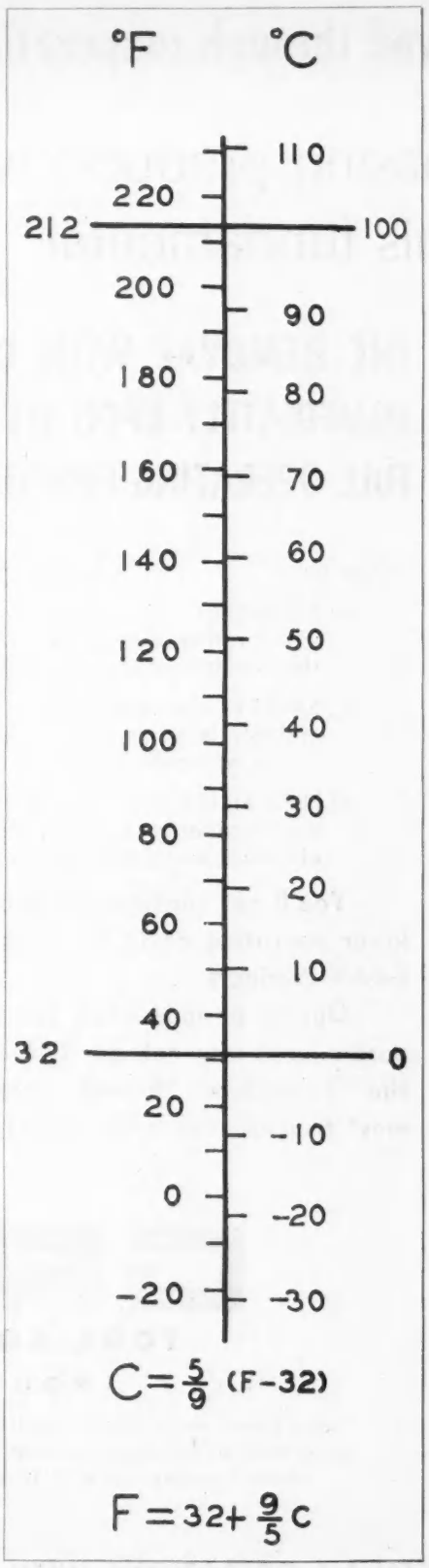


Figure 1-9. Temperature conversion chart.

The materials recommended for the construction of a model are water and conducting rubber. When this latter material is not available, a thick paste of well mixed sand and clay can be used instead. This paste is easily modeled to the required shape.

The materials are placed in a rectangular container, 24 x 24 inches for example. For the investigation of salt domes and other structures which are symmetrical about an axis, the container is tilted (Figure 1-5) in order to obtain for the water the correct wedge shape mentioned above.

The heat flow is simulated by an electric flow obtained by placing a flat electrode at each of two opposite ends of the model (see Figure 1-6).

The effect of surface relief can be approximately investigated by curving one of the current electrodes (Figure 1-7). This procedure simulates the case of a uniform temperature for the ground surface, which is not an unreasonable assumption when the topographic changes are not very large. In the case of high mountains or very deep depressions the data thus obtained are in error, and a more accurate procedure is desirable. This will be discussed in a later article.

Alternating current is preferable to direct current for simulating the heat flow, but d.c. may be used if so desired. In this case a relatively high voltage (more than 50 volts) is necessary because it permits disregarding the polarization potentials at the pickup electrodes. Almost any conventional tester or analyzer may be used for d.c. measurements.

To obtain the section of an isogeotherm the null-method is recommended for the potential measurements; one of the pickup electrodes is held stationary at a point P while the other electrode is placed in contact with the model. Every point registering a zero reading is situated on the equipotential surface passing through P. The line joining these points is a vertical section of an isogeotherm. By repeating the preceding procedure after electrode P is moved to various stations, for instance at points situated 10 volts apart, a family of isogeotherms is obtained.

To obtain the temperature values in a hypothetical vertical bore hole which is in thermal equilibrium, voltage measurements are made along a straight line, using one of the current electrodes as a reference point.

For a complete investigation of the temperature distribution in a formation, it is advisable to make both types of measurements.

The electric circuits used for this work are represented on Figure 1-8.

The experimental procedure described above, although extremely simple, is perfectly adapted to the investigation of the temperature in areas which are in thermal equilibrium, even if the conditions are extremely complex. On the other hand, the investigation of unsteady states necessitates serious modifications.

The unsteady states commonly found are caused by the following factors:

1. Diurnal and annual temperature changes in the superficial earth layer (about 100 feet thick),
2. Fluid intrusions,
3. Mud circulation in rotary holes,
4. Setting of cement behind casing.

Although cases No. 2, 3 and 4 are of great practical interest as far as the logging of wells by temperature measurements is concerned, no scale model experiment could be made for this work and only empirical data on the subject will be presented.

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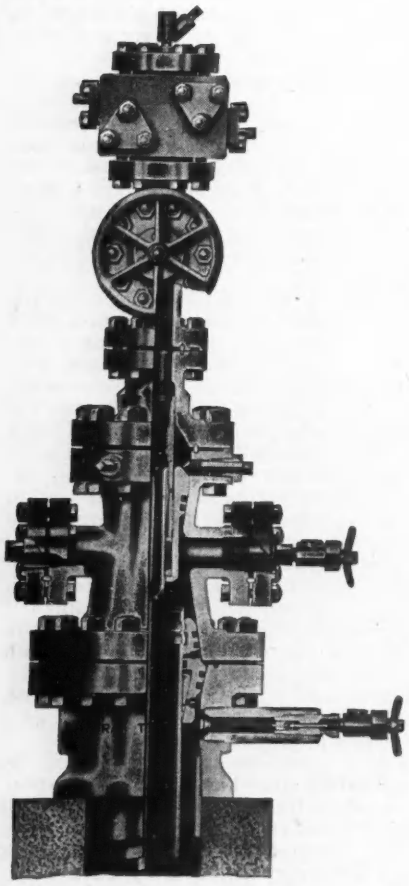

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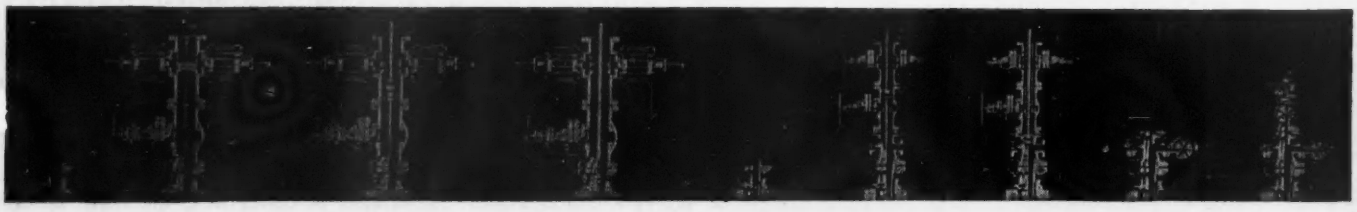

Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

Radioactivity Well Logs

INTERPRETATION AND APPLICATION

Part 4—Correlation With Other Type Logs

By V. J. MERCIER, Lane-Wells Company

ALTHOUGH radioactivity well logs contain within themselves sufficient information to adequately define the strata and well conditio nto their employer, one is wise to correlate any other information available, with the log.

A. Sample Logs: Sample logs are easily and simply correlated with the radioactivity log, either on new wells or on workover jobs. For an illustrative example, Figure 8 is a well in the Silica area of Kansas and shows a rather poor sample log secured years ago, as correlated with the radioactivity log. The reader can easily see several points for correlation, both in the shales and limestones. For the sake of simplicity only two dashed lines are shown, one on the top of the Lansing limestone, the other on the porous zone under consideration.

B. Permeability Surveys: In recent years permeability surveys by means of an electrical survey have become quite frequent, and their use has provided very essential data in many cases. Since the graph provided on the completion of a permeability survey is rather unwieldy, it is better to replot the pump rate in gallons per minute in a more usuable graph. Measurement corrections between these two types of logs are seldom necessary, as both are done on similar types of wire lines. Figure 9 illustrates nicely the data received by correlating a permeability survey with a radioactivity log. This is an old well that had been acidized and had produced over a number of years. Water encroachment had become serious, and the producer was in need of information for workover operations.

Easily apparent to the reader, in Figure 9, are a number of porous zones, shown by the diagonal symbol on the radioactiyity log, that have never received any benefit from previous acidizing treatments, illustrated by the permeability graph. This subject has been dealt with in previous articles,[8] and we shall not discuss it further here.

C. Core Analysis: Core analysis is probably the most detailed and informative data that it is possible to obtain from present-day wells. Without doubt, coring is the most time-consuming, and therefore most expensive, way of obtaining needed data. Be that as it may, the data obtained by coring is very analytical and oftimes a necessity.

Making Comparisons

Since most laboratories specializing in core analysis make their reports in detail, and the graphs supplied are on a greatly expanded scale, it is necessary to alter these graphs, as well as the radioactivity log, before attempting comparisons. It is best to replot all curves of the core analysis so that they are in the same direction as the neutron curve,

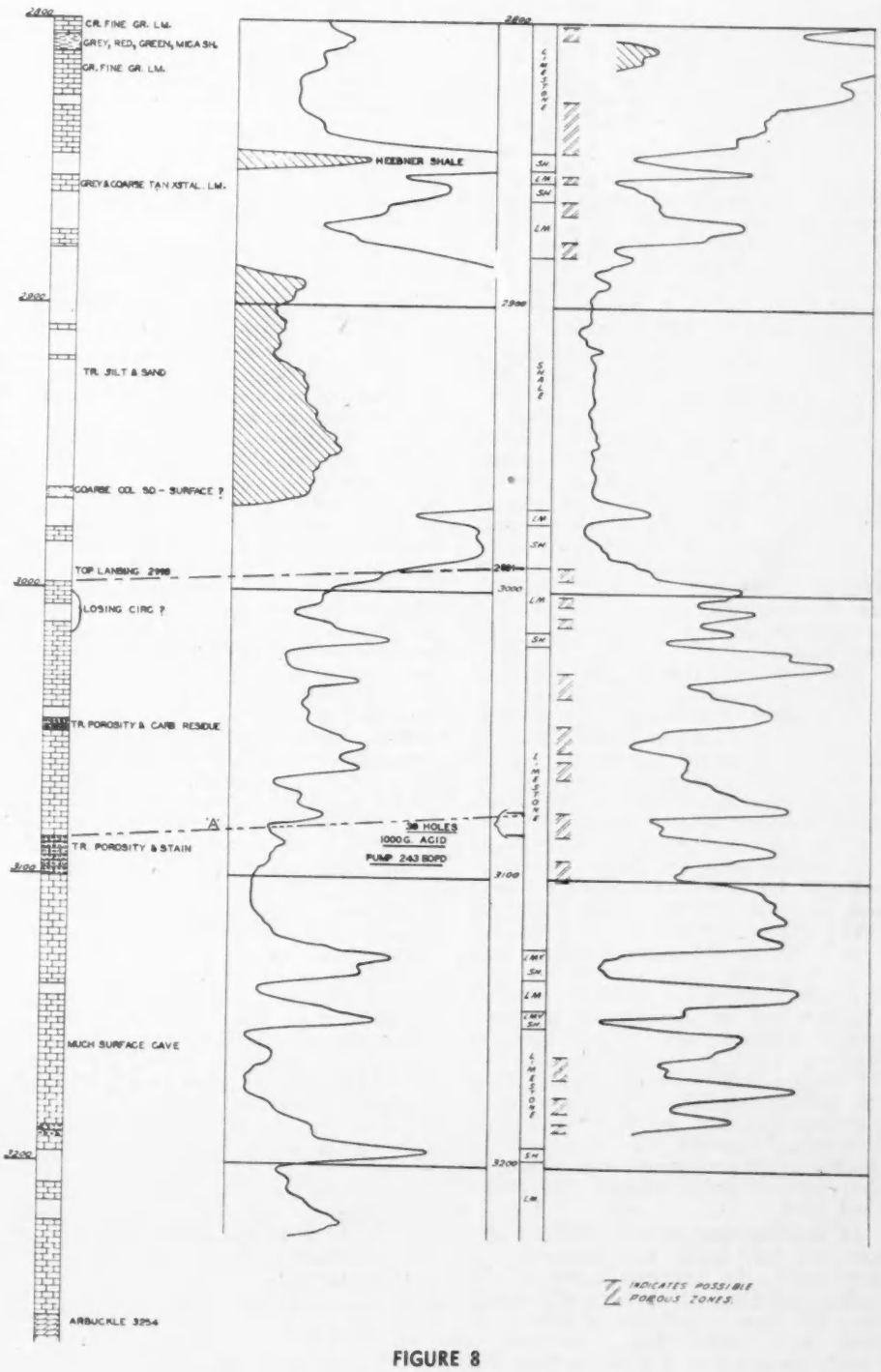

FIGURE 8

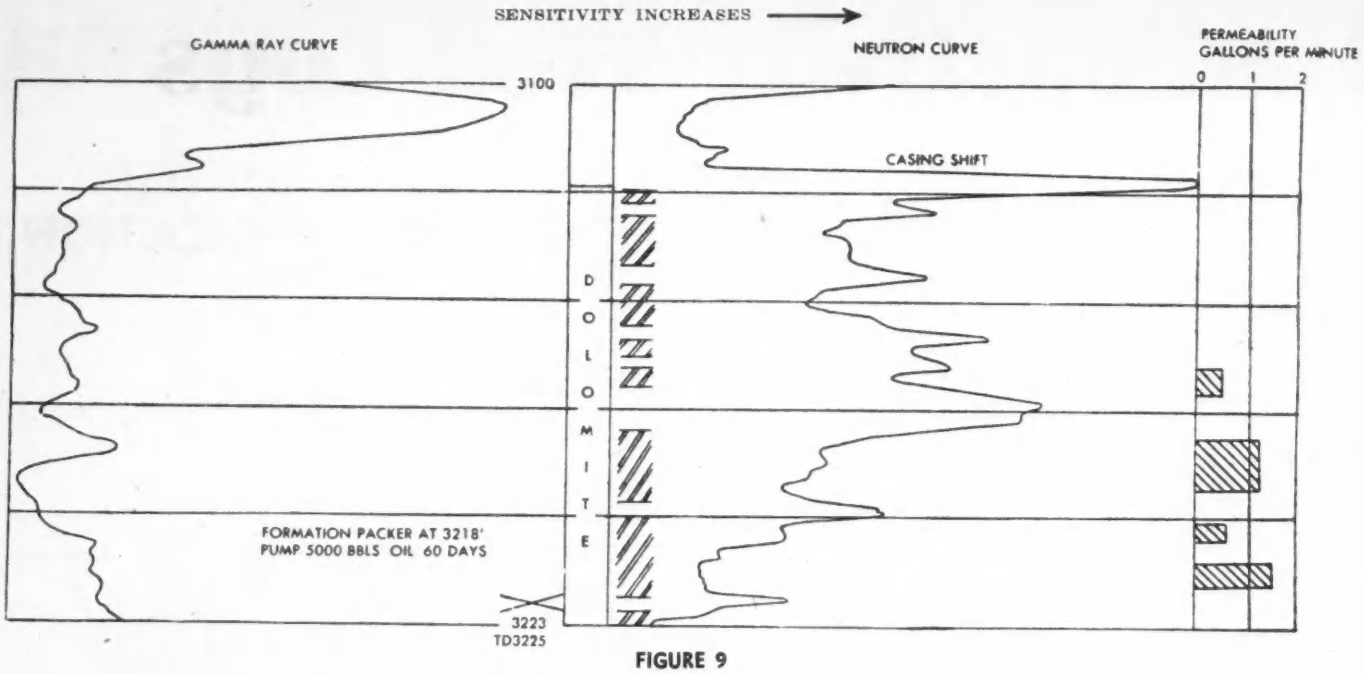

FIGURE 9

then to enlarge the radioactivity log to agree with the vertical depth scale of the core analysis. This has been done in Figure 10. The reader will note that the radioactivity log is somewhat distorted from its usual appearance, but the essentials are still apparent.

Also, the porous zones as originally interpreted are plotted on the radioactivity log by the diagonal symbols. First consider the sample analysis as compared with the gamma ray curve. The sample analysis shows the strata to be mostly dolomite and limestone, but in two instances where the gamma ray curve is characterized by increases in radioactivity the samples show the presence of glauconite and/or shale. This indicates that our vertical depths are synchronized, and we can proceed to compare the neutron curve with the core analysis.

We have stated that the neutron curve reflects the presence of hydrogen, or fluid content. Correlating the neutron curve with the fluid content or barrels-per-acre-foot curve (represented by the dashed lines) of the core analysis, we note an amazing similarity, and agreement, in almost all portions of the chart.

Study now the percent porosity curve and the permeability curve simultaneously in relation to the neutron curve and you will see that when there are both porosity and permeability, the neutron curve is indicating possible fluid content. When there is porosity, without permeability, the neutron curve is characterized by an increase in sensitivity, denoting lack of hydrogen or fluid.

Compare also the neutron curve with the coring time; here again is an amazing similarity that would be even more pronounced should the time log be drafted as an averaging curve instead of the point to point straight line graph used here.

D. Drilling-time Logs: Drilling-time logs are very easily and simply correlated with the neutron curve of the radioactivity log. All that is really necessary for their correlation is equal vertical depth scales. The correlation is readily apparent in Figure 10, and it is even more so when drilling-time is used instead of coring-time.

E. Electrical Logs: Radioactivity logs and the types of electrical surveys in common use today are also easily correlated. Although there is no relationship between the two types of surveys, and they are often surveyed under different well conditions, or years apart, there still exists a similarity in response that permits accurate correlation. This is most fortunate, for it is simple logic to comprehend that a multi-conductor cable, such as employed in electrical logging, used under varying fluid and mud conditions cannot be expected to measure accurately. Therefore, when an operator desires to accurately define the pay horizons, or correct electrical log measurements for any reason, he has at his disposal a radioactivity log surveyed under ideal conditions, through the casing, on a calibrated single-conductor steel sheathed line. The problem of measurements, and the use of radioactivity logs to remedy the situation is very effectively dealt with by Shepherd in a previous article.[3] Also, the article makes a comprehensive study of correlations possible with radioactivity and electrical logs.

In making correlations between radioactivity and electrical logs, the gamma ray curve is correlated with the self-potential curve while the neutron curve is compared with the shallow resistivity curve. Figure 11 is a graphic picturization of this correlation. In the center of the figure is the electrical log, to the left is the gamma ray curve, and to the right is the neutron curve. The similarity existing between the two types of logs is easily apparent.[9]

Points for Accuracy

There are several points throughout both logs to use as correlating points but, in the main, the best points for the most accurate work are as follows:

1. Shale peaks.
2. Limestone or sandstone peaks.
3. Shale tops.
4. Formation tops.

In limestone areas, such as illustrated by Figure 11, greater definition or detail is possible by radioactivity than by electrical means. Several places are noticeable on the illustration given here.[9] However, caution should always be exercised in the correlation of radioactivity and electrical logs. Even though they appear very similar at times, it is well to remember that each log is based upon an entirely different principle. Radioactivity logs respond to the mineralogical part of the strata, and are therefore lithological logs. Electrical logs are caused by electro-chemical phenomena which result from the difference between the bore-hole fluid and formation fluid rather than from any physical property or constituent of the rock.

Radioactivity logs, especially the neutron curve, are particularly adaptable to the location of porous media in limestone and dolomite areas. At the same time, according to an authority, electrical logs are not at their best.[10]

F. Caliper Logs: To my knowledge there has not yet been an occasion when it was necessary to correlate a radioactivity log with a caliper survey.[12] In all likelihood, any badly washed-out portion of the well as indicated by the calipers would be indicated by a "shift" in the curves of radioactivity log. This would be much more apparent on the neutron curve than on the gamma ray.

G. Other Radioactivity Logs: By Figure 3 (THE OIL WEEKLY, October 14), we illustrated the long-range lithological correlations possible with the gamma ray curves. A correlation of neutron curves over such a distance would hardly be comprehensible. Within a field development, correlations of the porous zones are very practicable and will provide the engineer or geologist with vital data. In Figure 12, for example, we have an east-west correlation of six logs in the Adell pool of Kansas illustrating by dashed lines the top of the Lansing-Kansas City limestone and one of the porous zones of that pool. A straight edge paralleling these lines will give the reader many more porous zone correlations. Although

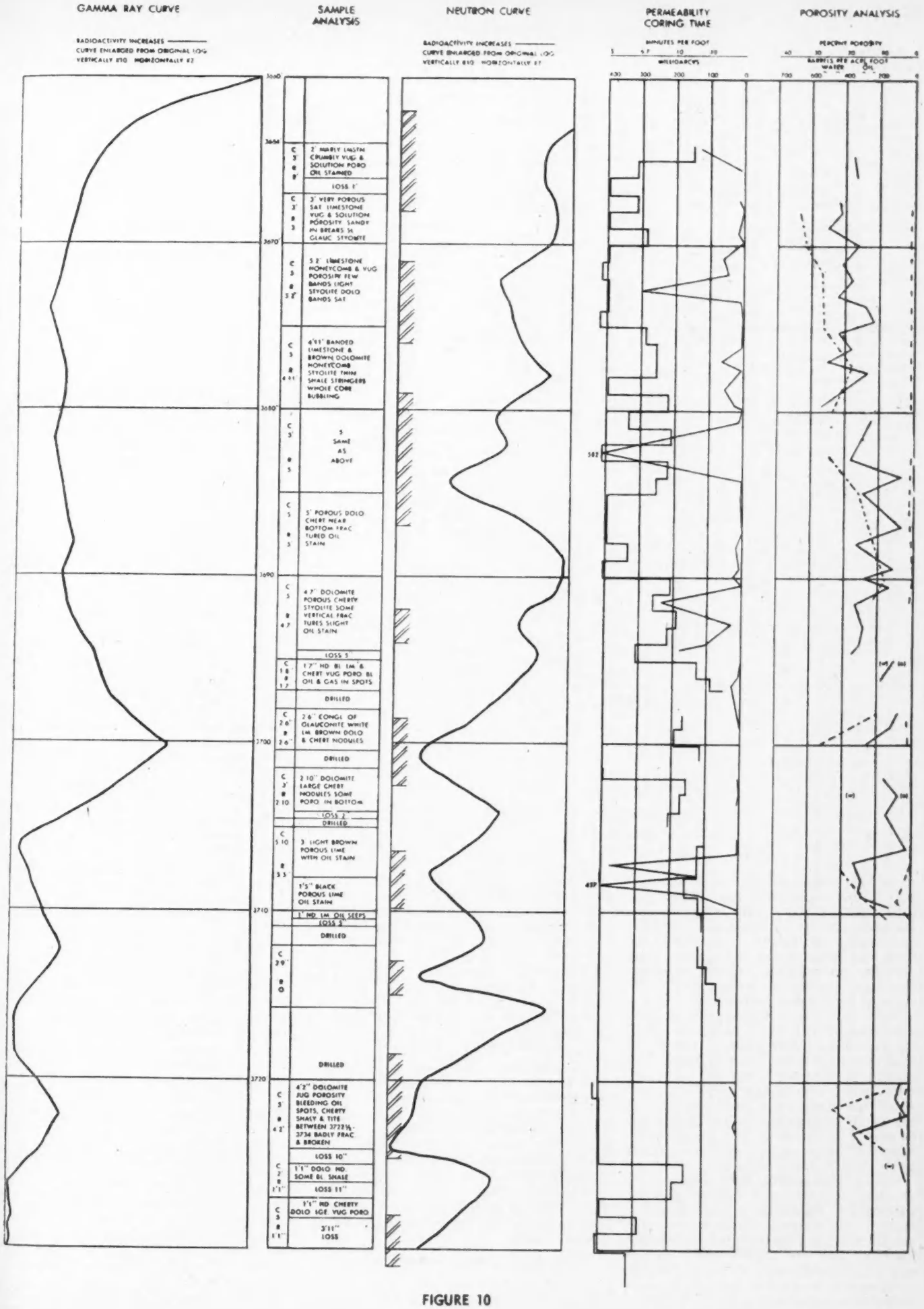
GAMMA RAY CURVE
RADIOACTIVITY INCREASES
CURVE ENLARGED FROM ORIGINAL LOG
VERTICALLY 8:10 HORIZONTALLY #2
SAMPLE ANALYSIS
NEUTRON CURVE
RADIOACTIVITY INCREASES
CURVE ENLARGED FROM ORIGINAL LOG
VERTICALLY 8:10 HORIZONTALLY #2
PERMEABILITY CORING TIME
MINUTES PER FOOT
MILLIDARCYS
POROSITY ANALYSIS
PERCENT POROSITY
BARRELS PER ACRE FOOT
WATER
3660
3670
3680
3690
3700
3710
3720
2' MARLY LMSTN CRUMBLY VUG & SOLUTION PORO OIL STAINED
LOSS 1'
3' VERY POROUS SAT LIMESTONE VUG & SOLUTION POROSITY SANDY IN BREAKS SL GLAUC STYOLITE
5.2' LIMESTONE HONEYCOMB & VUG POROSITY FEW BANDS LIGHT STYOLITE DOLO BANDS SAT
4'11" BANDED LIMESTONE & BROWN DOLOMITE HONEYCOMB STYOLITE THINS SMALE STRINGERS WHOLE CORE BUBBLING
5 SAME AS ABOVE
5' POROUS DOLO CHERT NEAR BOTTOM FRACTURED OIL STAIN
4.7" DOLOMITE POROUS CHERTY STYOLITE SOME VERTICAL FRACTURES SLIGHT OIL STAIN
LOSS 5
1.7" HD BL LM & CHERT VUG PORO BL OIL & GAS IN SPOTS
DRILLED
2.6" CONGL OF GLAUCONITE WHITE LM BROWN DOLO & CHERT NODULES
DRILLED
2.10" DOLOMITE LARGE CHERT NODULES SOME PORO IN BOTTOM
LOSS 2"
DRILLED
3' LIGHT BROWN POROUS LIME WITH OIL STAIN
1'5" BLACK POROUS LIME OIL STAIN
1' HD LM OIL SEEPS
LOSS 3'
DRILLED
DRILLED
4'2" DOLOMITE VUG POROSITY BLEEDING OIL SPOTS, CHERTY SMALY & TITE BETWEEN 3722½ - 3734 BADLY FRAC & BROKEN
LOSS 10"
1'1" DOLO HD SOME BL SHALE
LOSS 11"
3'1" HD CHERTY DOLO SGE VUG PORO
3'11" LOSS
587
439

FIGURE 10

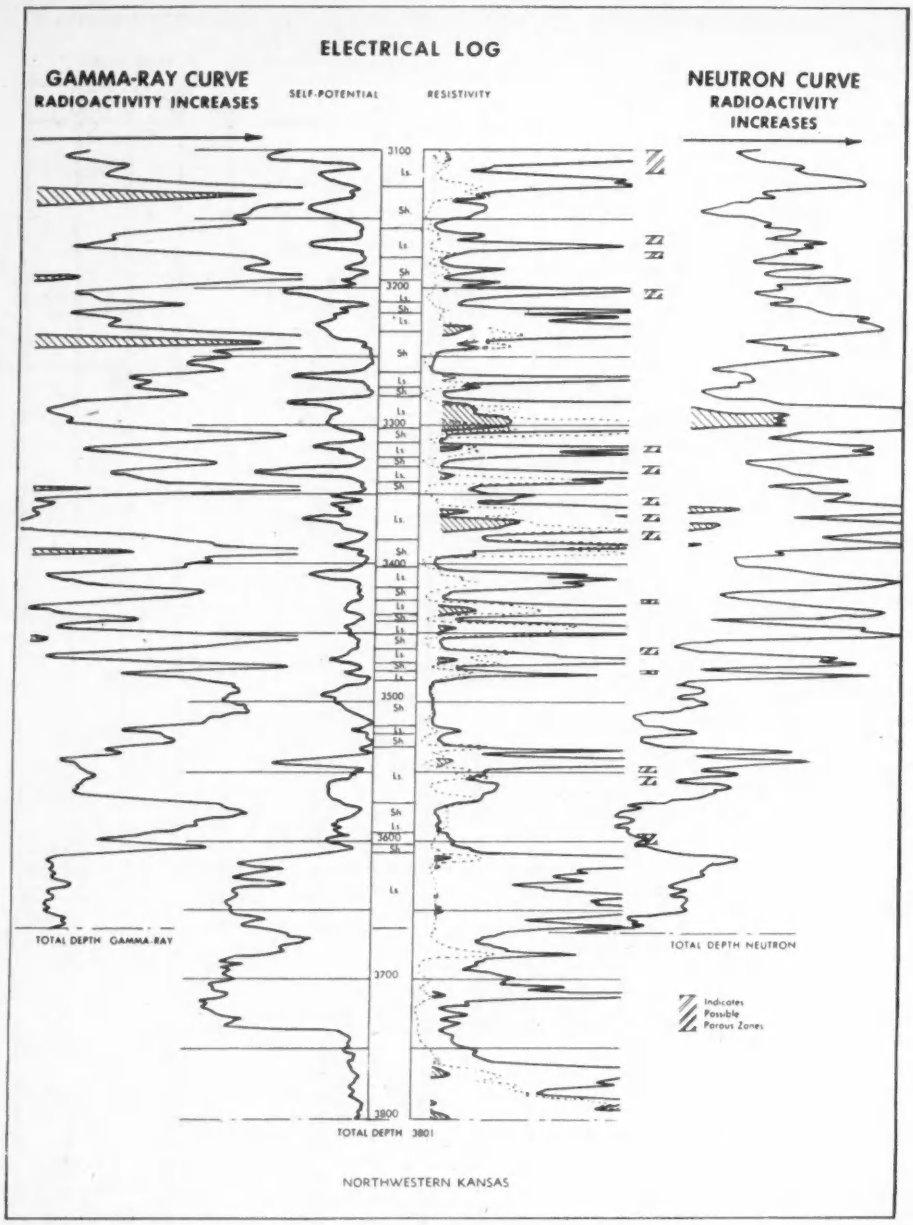

FIGURE 11

these logs were run over a six months' period, by many different technicians, their relative values are very similar. However, before attempting to make a quantitative analysis of the porous zones from one well to the other, one must consider carefully the relative sensitivities and conditions under which the surveys have been made.

Attached to each finished log print is a heading, or title sheet, which gives all the necessary information pertaining to that particular well. Most of this information is obtained from the oil company, and the company agent that provides this information would be wise to assure its accuracy. Under "Remarks" is posted the scale of the radioactivity survey. This scale is explained as follows:

On all radioactivity field survey units are two standard test bottles, one for gamma ray instruments, the other for neutron instruments. These test bottles are filled with a quantity of radioactive material, and are adjusted to a standard, so that each field unit can then be compared to any other unit. At a given instrument adjustment, the test bottle will cause the recorder pen to deflect to the right for so many inches. After this standard has been attained, then any increase or decrease in amplifier attenuation can be expressed in inches deflection.

Figure 13 represents a log heading. Under "Remarks" the scale of each curve is expressed in inches deflection, speed of traverse in feet per minute, and vertical depth in inches of graph per one hundred feet of well.

In analyzing adjoining radioactivity surveys for a quantitative evaluation one must consider the following:

1. Deflection in inches.
2. Speed in feet per minute.
3. Hole cased or uncased.
4. Casing size and weight.
5. Fluid in hole, or no fluid.
6. Depth scale.

All things being equal, or compensated, a quantitative correlation may be made.

Part 5—General Considerations

Many varied methods for the logging of oil wells have been developed and practiced through the years since exploration for oil began. The most common log being the sample log obtained by geologists, who examine and identify the cuttings from the drill and plot their findings on a strip of paper with relation to depth. As the science of oil exploration developed, so too did the science of oil well logging advance, until today the operator can call upon approximately 11 general methods. These methods arranged alphabetically are:

1. Acoustic.
2. Chemical.
3. Electrical.
4. Gravitational.
5. Intake.
6. Magnetic.
7. Mechanical.
8. Optical.
9. Radioactivity.
10. Seismic.
11. Thermal.

Although these many methods could be used to log oil wells, only a few are being used extensively at present. The methods most frequently employed commercially are:

1. Optical.
   (a) Examination of samples.
   (b) Fluorescence.
2. Mechanical.
   (a) Drilling rate, hardness.
   (b) Drilling reaction, hardness, texture.
   (c) Hole calipering.
3. Radioactivity.
   (a) Natural, radioactive substance content.
   (b) Artificial, hydrogen content.
4. Electrical.
   (a) Natural potential.
   (b) Formation conductivity.
   (c) Mud conductivity.

In the selection of the best method for the logging of an oil well, careful consideration must be given problems to be solved, methods available, adaptability of the method, and cost of the method.

The method selected should therefore have as many as possible of the following properties:

1. Significant relationship to the lithology of the rocks.
2. Detection of oil, gas, or certain minerals penetrated by the bore.
3. Many vertical variations, ability to differentiate strata.
4. Persistence of vertical variations laterally, to provide good subsurface correlations.
5. Ability to work under almost any bore condition.
   (a) Cased holes, dry or filled with fluid.
   (b) Open holes, dry (cable tools).
   (c) Open holes filled with mud or water.
   (d) Open holes filled with oil or gas.
6. Location of porous strata.
7. Economy of operation.
8. Simplicity of interpretation.

Radioactivity well logs nearly fit all these requirements. Coring, and core analysis, is the only positive means of lithological identification, but due to its excessive cost is not too widely em-

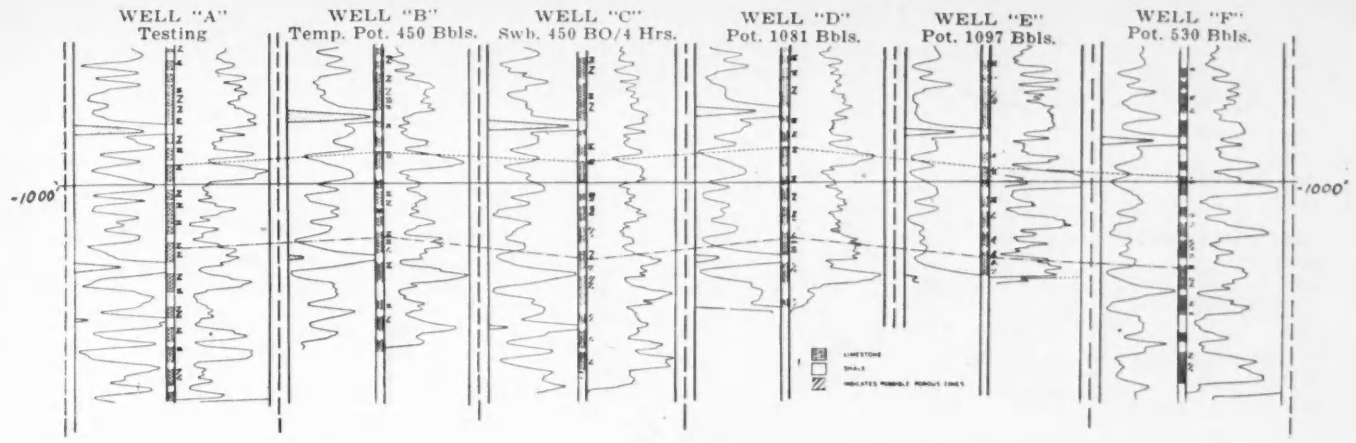

FIGURE 12

ployed. The relationship of the radioactive content of the strata to lithology has already been pointed out, and a suitable lithological identification can be executed by the gamma ray curve.

No positive means of the detection of either oil or gas has been yet determined other than fluorescent and chemical examination of samples and cores. Electrical logs are rated as fair to poor in the detection of oil and gas.[10] At present the combination radioactivity log makes no claim to the *direct* detection of oil or gas, but the indirect use of the log, by correlation, or structural determination, has been the means of locating many new pay horizons. It is therefore stated that radioactivity logs are as capable in the detection of oil and gas as other logging methods excepting, of course, visual examination of conventional cores. Research and future development may well provide a sure means of oil detection either through the development of an additional curve or through better interpretative analysis.

Considering now the requirements 3 and 4 given above—vertical variations for differentiating strata, and vertical variations laterally of ample magnitude to provide subsurface correlations. Sufficient evidence of the adaptability of the radioactivity log to correlative work has already been presented in the text, and illustrated by Figures 3 and 12.

In considering requirement 5, it is to see the advantages and flexibility of the radioactivity log. The radioactivity log can be obtained in cased-hole, dry or containing bore-hole fluid of any type. Also, the radioactivity log can be obtained in open-holes, dry, or containing salty mud, conditioned mud, fresh water, oil or any mixture of these fluids. Radioactivity logs are not limited to operating in open-hole, and are not limited further to operating under conditioned well fluids of proper electrical resistance. Radioactivity surveys operate in salty-mud, and mud-conditioning is necessary.

The location of porous strata by the neutron curve, especially when interpreted simultaneously with the gamma ray curve, has been adequately described and explained in the preceding pages. The ability to determine porous strata by radioactive means has been proved beyond all doubt by the hundreds of successful oil well completions employing radioactivity logs. Electrical logs are definitely limited in determinations of porous strata.[10]

Because of the flexibility of the radioactivity log, it becomes also the most economical survey available. No special arrangements, or hole-conditioning, are necessary. The economics of radioactivity logging has been adequately discussed by Maxwell in an article devoted to that subject.[13] Also a tabular comparison of electrical and radioactive surveys in the salt area of Kansas has appeared previously.[14]

Simplicity of interpretation is one of the prime advantages of logging by radioactive means. It is not necessary for the oil operator, engineer, or geologist to become also a nuclear physicist. A very basic understanding of the principle upon which the radioactivity log operates, the action behavior of the recorded picture obtained, which has been explained in the preceding pages, and a knowledge of the lithology of the region are all that are necessary for accurate interpretation.

Part 6—Conclusion

While the scope of this article, and the illustrations used are more or less confined to Kansas areas, the results achieved by the use of radioactivity logs in these areas clearly indicate how valuable this service can be in obtaining subsurface data that can be utilized for greater economy and improved efficiency in many oil field operations, wherever they may be.

The application of radioactivity logs, either as individual logs or as a combination of both curves, can be briefly outlined as follows:

1. Locate cased-off possible producing strata.
2. Accurate definition of tops and bottoms of formations.
3. Correcting measurements when electrical log and drill-pipe do not agree.
4. Clarify or confirm uncertain anomalies.
5. Correlation for structural analysis.
6. Location of radioactive additives, such as carnotite in squeeze cementing and tracers in permeability studies.
7. Location of porous strata.
8. Accurate location of physical conditions existing in well such as casing shoe, liner top, special alloy casings, etc.
9. Correlation of porous strata.
10. Permeability correlations (with other data).
11. Obtain accurate well log where fluid conditions prevent a reliable electrical log.

These applications are general classi-

LANE RADIOACTIVITY LOG **WELLS**
COMPANY

Location of Well
C E-Line S W
SEC. 14-13S-8W
Elevation 1777

COMPANY: JOHN DOE, INC.
WELL: ROE No. 1
LOCATION: SEC. 14- 13S- 8W
C E-Line S W
FIELD: WILDCAT
COUNTY OR PARISH: LINCOLN
STATE: KANSAS
DATE: DECEMBER 20, 1942

COMPANY: JOHN DOE, INC.
WELL: ROE No. 1
FIELD OR SURVEY: WILDCAT
COUNTY: LINCOLN

WELL RECORD

Bottom Depth Company: 3191 ft.
Maximum Depth Reached: 3193 ft.
Surveyed From 10 ft. to 3191 ft.
Footage Recorded: 3181 ft.
Well Fluid: NONE
Fluid Level: DRY ft.

CASING RECORD

7 ins., #, from 0 to 3189 ft.
ins., #, from to ft.
ins., #, from to ft.

REMARKS

SCALE: GAMMA RAY	DEFL. 11",	16"/MIN,	5"/100',	2100 to 3191
	DEFL. 11",	20"/MIN,	2"/100',	0 to 2100
SCALE: NEUTRON	DEFL. 15",	16"/MIN,	5"/100',	2100 to 3191
	DEFL. 15",	20"/MIN,	2"/100',	0 to 2100

Depths Measured From TOP OF CASING Ordered By JOHN DOE
Recorded By BROWN Witnessed By JAMES BLACK

FIGURE 13

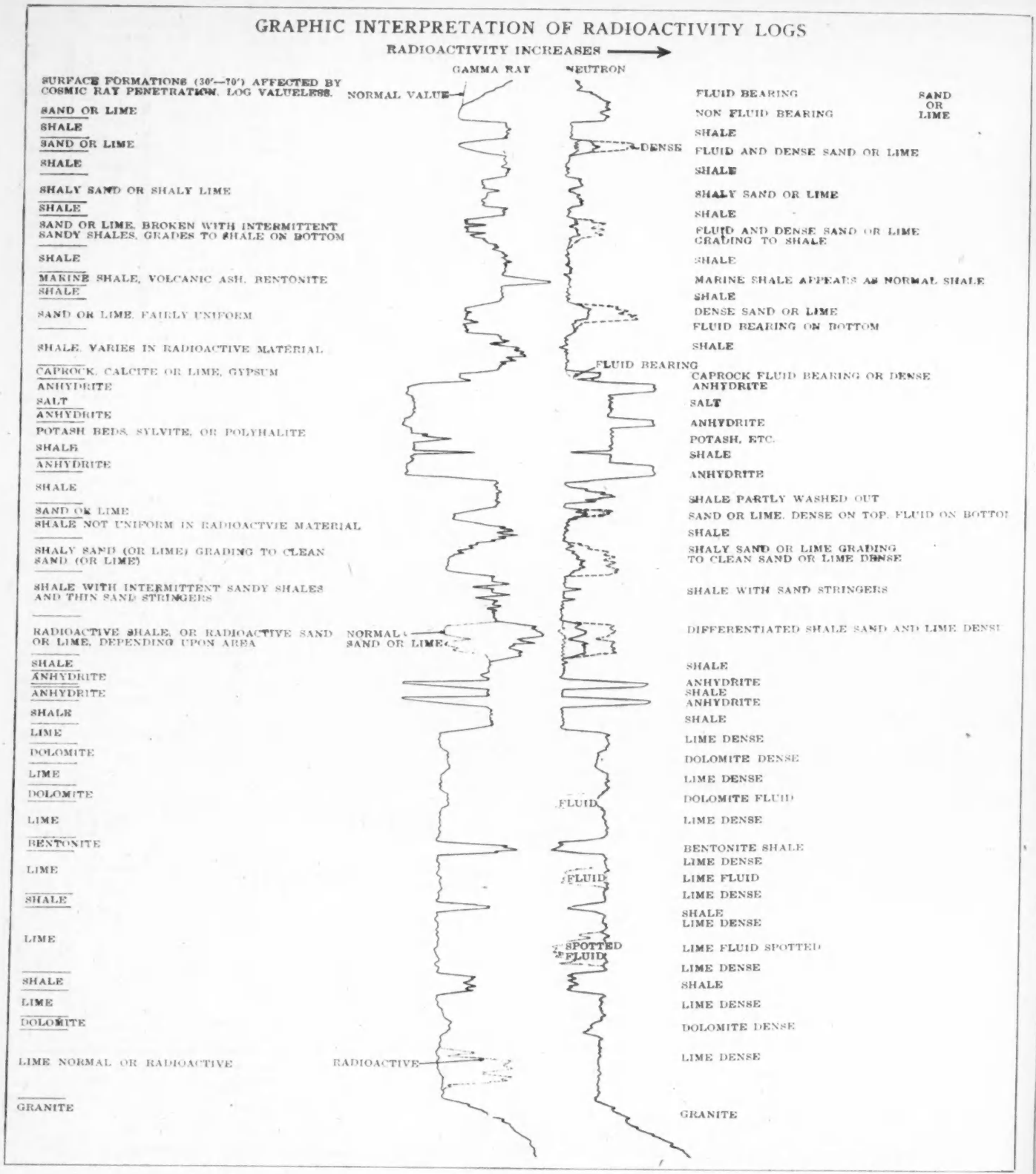

FIGURE 14

fications; under each of the above could be listed several special applications.

The article has primarily dealt with interpretations of radioactivity logs, and the subject of interpretations can be best summarized by the use of a type log, or idealistic log. This is given here as Figure 14, and attempts to illustrate the curve response of both the gamma ray curve and neutron curve progressively from the surface down to the Pre-Cambrian.[26]

Finally, the radioactivity log is at once both the most recent development in well logging, and the most flexible. If a method can be developed which will identify the fluid content, the radioactivity log will have achieved perfection. In view of recent great advances of nuclear physics, this method seems to have the best possibilities for the advancement of the science of well logging.

REFERENCES

[8]V. J. Mercier, "Logging Kansas Dolomites by Radioactivity," Tomorrow's Tools Today, 4th Quarter, 1945.

"Radioactivity Logging of Dolomites"—The Oil Weekly, April 15, 1946.

[9]J. C. Barcklow, "Adaptability of Radioactivity Logs to Limestone Zones in Old and New Wells," Tomorrow's Tools Today, 2nd Quarter, 1943.

[10]Hubert Guyod, "Electrical Well Logging," The Oil Weekly, Fall, 1944.

[11]Hubert Guyod, "Electrical Log Interpretation," The Oil Weekly, December, 1945.

[12]Hubert Guyod, "Caliper Well Logging," The Oil Weekly, Sept., 1945.

[13]C. T. Maxwell, "Radioactivity Economics," Tomorrow's Tools Today, 2nd Quarter, 1944.

[14]V. J. Mercier, "Radioactivity Well Logging in Kansas," Tomorrow's Tools Today, 1st Quarter, 1945.

[15]V. J. Mercier, "Radioactivity Well Logging," Oil and Gas Journal, April, 1945.

[16]John L. P. Campbell and A. B. Winter, "A Review of General Notes on Radioactivity Well Log Interpretation," Tomorrow's Tools Today, 2nd Quarter, 1946.

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SAN FRANCISCO 8

Influence of Clay Content On Water Conductivity of OIL SANDS

By T. F. BATES, R. M. GRUVER and S. T. YUSTER

THIS paper discusses a study of the clay minerals associated with the Bradford sand. Three techniques were used in the investigation; namely, differential thermal analysis, X-rays, and the electron microscope. The chief clay mineral present was Illite, with small quantities of Kaolinite and Montmorillinite also present. Evidence was obtained for the presence of strongly adsorbed organic material on the clays which may be of some importance in the migration of petroleum.

IT IS a well-known fact that the routine air permeability determination performed on cores from oil-producing formations cannot predict in general the ability of such a formation to conduct water. This problem is apart from the one involving a relative permeability versus saturation determination which is sufficiently difficult in itself. Even with the simplifying assumption that the core is completely saturated with water, it is not possible at the present time to forecast its conductivity. In fact, the effective permeability to water may be from zero to 100 percent that of the air permeability depending on the type of porous medium and the makeup of the water. In view of the importance of this problem in water flooding, it has been and is being studied both in the laboratory and in the field.

The offending materials which are present in the sand and causing a reduction in conductivity to water are a family of complex silicates which are covered by the generic term "clays." These undergo physical-chemical reactions with the waters in contact with them, and the average water which is injected in water flooding usually causes them to swell. The extent of swelling is a function of the type of clay, and the concentration and type of ions dissolved in the water. The reduction in conductivity is dependent on (1) the extent of swelling of the clay, (2) the quantity of clay present in the sand, and (3) its distribution in the sand.

Recently, The School of Mineral Industries of The Pennsylvania State College acquired some special equipment for the study of clays and associated materials, and it was decided to attempt analyses of the clay content of some sands which were being water flooded.

Sample Preparation

The procedure used for concentrating the clay content of the sand was as follows:

The sand was first given an extensive extraction with naphtha and then very carefully broken down to grain size with a mortar and pestle using a special technique. The disintegrated sand was passed through a series of sieves and the minus 400 mesh fraction retained for further processing or analysis. Some of the samples so obtained were made into a water paste and elutriated in water. It was felt that this process served to concentrate the clay away from the other minerals (chiefly quartz) which were present in preponderant quantities. Samples of shales interbedded with the oil sand were also ground and tested in order to aid in the identification of the clays in the sand.

* The authors are of the Mineralogy, Ceramics, and Petroleum Engineering Divisions respectively of The School of Mineral Industrices of The Pennsylvania State College, State College, Pennsylvania.

Two tests were performed on the samples. The first was the method of "differential thermal analysis"[1] which has been used for some time in the analysis of clay minerals. The process consists of determining the temperature difference by means of a differential thermocouple between a clay sample and a thermally inert substance, both of which are being heated simultaneously at a constant and equal rate. Any chemical or physical changes in the clay involving the liberation or absorption of heat such as loss of water of hydration or changes in crystalline state will create a temperature difference between the clay and the inert substance. This produces a differential temperature versus actual temperature curve which is characteristic of the clay minerals present. diffraction and the apparatus used was the X-ray spectrometer. This apparatus subjects the sample to a stream of X-rays at a continuously varying incident angle. The intensity of the diffracted beam is measured simultaneously at the same angle as the incident beam with a Geiger counter. The curve produced is the scanning angle versus the intensity of the diffracted beam and is characteristic of the material being tested.

In order to determine the physical state (shape and size) of the materials being studied and as a possible aid in the identification, some pictures were made under high magnification with the electron microscope.

The SS-7 samples are from the Bradford sand horizon of the Kane pool and the 7-K-5 samples are from the Third Bradford sand of the Bradford oil field.

Differential Thermal Analysis Data

Figure 1 is a composite graph of the curves obtained with the differential thermal analyzer. The scale along the x-axis is in degrees centigrade. Since the graphs were drawn by a recording instrument having a hinged pen, a constant temperature line would be an arc of a circle which is concave to the right. It is for this reason that some of the curves appear to be distorted and lean to the right. Starting from the origin, the short vertical lines indicate jumps of 100° C. in temperature. A horizontal base line has been drawn for every sample tested. This line represents the trace the pen would draw if there were no temperature differentials between the inert standard and the unknown sample being run. Points above this horizontal line indicate that the temperature in the unknown is above the standard with the reverse being true for points below the line. Points above the line indicate an exothermic reaction and points below the line point to an endothermic reaction. Height of the peak and depth of the valley give the degree of exothermicity and endothermicity respectively.

The interpretation of the differential thermal analysis curves requires a comparison with curves obtained from known materials. Two such standards are included in Figure 1. They are Illite and Bentonite, the latter being rich in the clay mineral Montmorillinite. The general shapes of the curves and the position of the peaks and valleys are the basis of comparison.

The curves in Figure 1 marked "Conc." are concentrated samples obtained by water elutriation from the minus 400 mesh sand samples. The shale samples were finely ground and passed through a 100 mesh sieve to remove the coarse pieces. No further treatment was necessary since the analysis is not affected within reason by the particle size.

Comparing Sample A with the standards D and E indicates that the clay in this sand is chiefly Illite. The same is true for Sample B, the concentrate, except for an exothermic peak at about 700°. Comparison with other clay mineral standards indicates that A has a small content of Kaolinite which has been strengthened somewhat during the concentration process in B.

It should be pointed out that the clay minerals are not always very definite chemical substances. The Illite sample given in Figure 1 (Curve D) is a typical curve for this mineral but there are variations of this. The same is true for other clay minerals, and the interpretation of a curve is usually made on the general shape instead of on minor variations.

Curve F also shows evidence of the presence of Illite except for some small exothermic peaks which are indicative of traces of organic matter. Curve G, which is a concentrate of the sample in F, is very typically Illite except for an extremely strong exothermic peak (probably organic matter) between 600 and 900°. The shale associated with the sand is given in H and has a shape

similar to G except for the strong exothermic peak.

The differential thermal analysis curves on the minus 400 mesh sand samples, the water elutriated concentrate, and the shales associated with the sand indicate that Illite is probably the predominant clay mineral present. In samples A and B some Kaolinite is also indicated. If Montmorillinite is present, it is not present in sufficient quantities to be detected by this method.

The presence of an exothermic peak at around 700° in B and between 600° and 900° in G and the possibility of organic matter in F can probably be expected in a material that has been in contact with such a complex organic substance as petroleum. The surprising thing, however, is that the shales which were interbedded with the oil sand do not show such peaks.

Since the samples of sandstone were subjected to a hydrocarbon extraction prior to reduction to grain size, it was feared that a portion of the solvent may have been adsorbed on the clay. In order to test this, some of the finely ground shale was placed in an extractor and extracted for about 48 hours. There was no appreciable change in the differential thermal analysis curve which eliminated the solvent adsorption possibility.

An examination of sample G at high magnification under the light microscope did not disclose the presence of any discrete particles of organic matter. If it is present, it must be as an adsorbed film.

This raises some interesting questions with respect to the migration of oil into the reservoir. Did the oil migrate through the shale partings in entering the sandstone beds? If so, why is there no organic material adsorbed within the shales? Has there been some powerful desorptive forces in action in the shales which has purged them of organic material? These questions cannot be answered with the data at hand. It would be of interest to use the method of differential thermal analysis on suspected petroleum source beds and adjacent strata to study the genesis and migration of petroleum.

X-Ray Spectrometer Data

Figure 2 is a summary of the X-ray spectrometer results. The letter designation corresponds to the samples given in Figure 1.

The scanning angle is plotted along the x-axis and the intensity along the y-axis. The peaks at 8.5° and 19.5° in Figure 2 are characteristic of the white micas of which the clay mineral Illite is a member. The peak at 12.5 is characteristic of Kaolinite, whereas other peaks in the pattern are chiefly quartz and feldspars. Sample B in the X-ray spectogram shows a strong Kaolinite and a weak Illite peak. This confirms in general the differential thermal analysis curve. Sample C displays a weaker Kaolinite and a much stronger Illite peak. In the case of Sample H, the X-ray spectrogram shows very high Illite peaks whereas certain smaller peaks in the pattern indicate that the 12.5° peak may be largely chlorite. This eliminates the possibility of Kaolinite existing in this sample in any appreciable quantities. Sample G shows weak Illite and

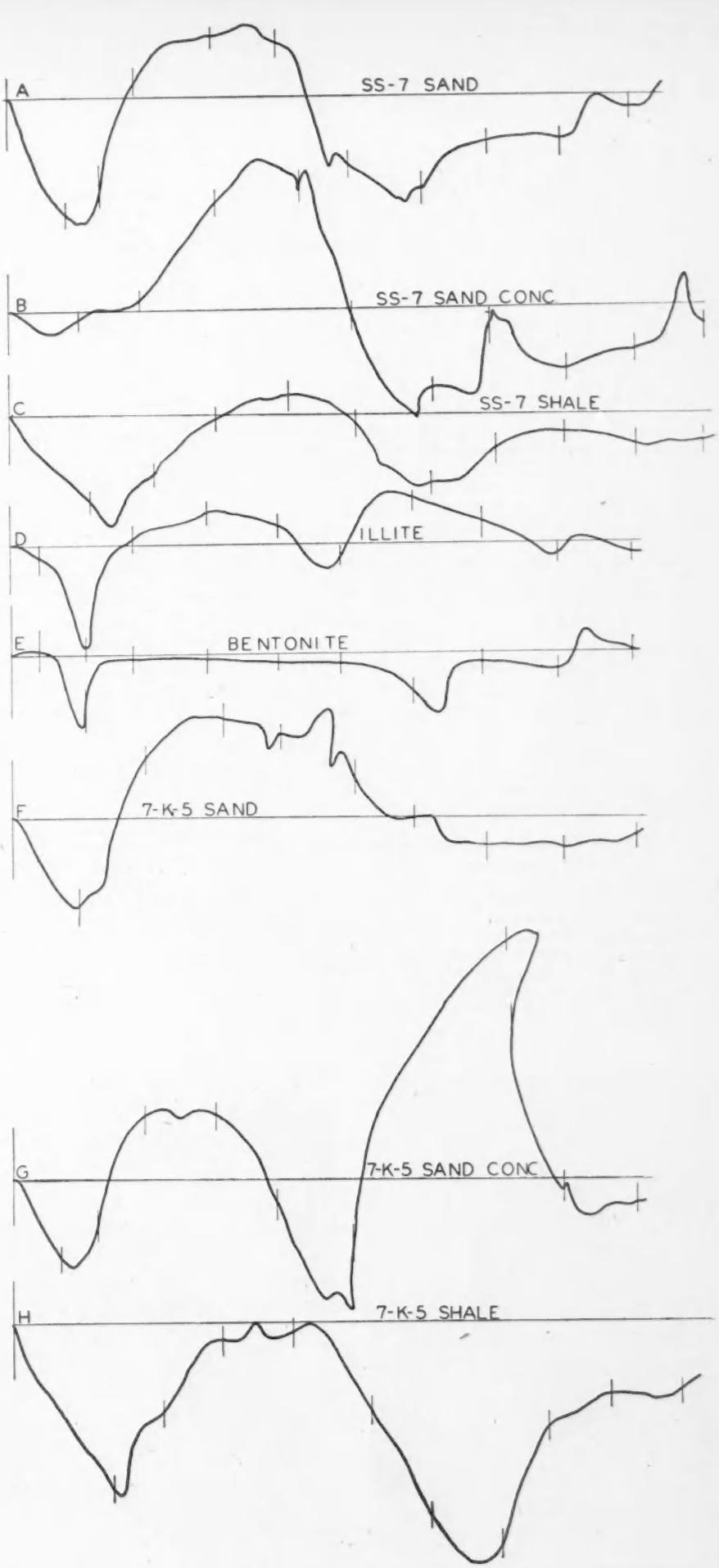


Figure 1. Differential thermal analysis curves of clay minerals, shales and sand concentrates.

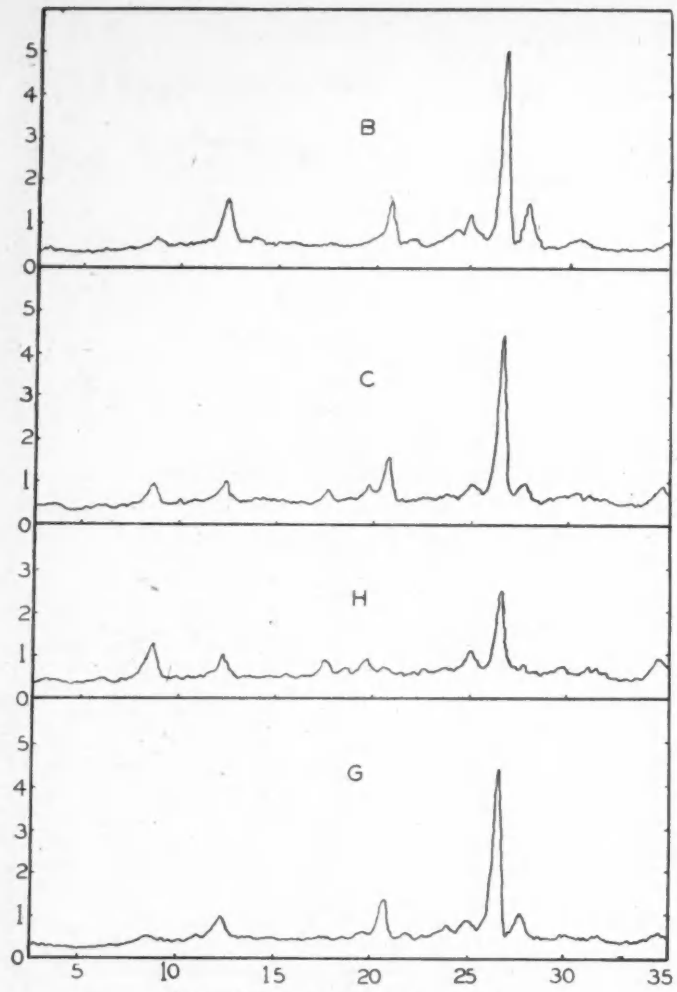


Figure 2. X-ray spectrometer curves

Kaolinite peaks. However, a Montmorillinite peak is also present. In the light of these data, the differential thermal curve G may be a combination of Montmorillinite and Illite. In general, the X-ray spectrometer data check the results obtained on the differential thermal analyzer.

Figures 3, 4 and 5 are typical fields of view of the materials under study in the electron microscope. The scale mark on the pictures represent one micron (about one twenty-five thousandths of an inch). Figure 3 is of Sample B and shows the typical micaceous particle found in these sediments. Figure 4 of Sample G shows a shreddy aggregate which is a structure characteristic of swelling minerals. Figure 5 of Sample H shows the type of micaceous aggregate found in the shale associated with the oil sand.

As was pointed out previously, the electron-photomicrographs are only an adjunct to the studies made with the other instruments. The physical characteristics such as size and shape of the particles are the chief information obtained.

Conclusions

This study indicates that Illite is the commonest clay mineral found in the Bradford sand with some Montmorillinite and Kaolinite also present. Since only two samples plus the associated shales have been studied, these results should be taken with caution. Further studies are needed to clarify the picture. Not only should studies be made of samples from different parts of a field but also at different depths in a given well. The most that can be said of the rseults so far is that there is evidence for the presence of minerals in the sand which can swell when in contact with fresh water. These minerals may be responsible for some of the reductions in water input rates in water flooding.

The strong exothermic peaks shown in the differential thermal curves indicate the possible presence of organic materials. These may be the polar compounds which have been discussed for some time as effecting the wettability of sand. They are very strongly adsorbed, and it is almsot impossible to remove them by simple extraction. Further studies are needed on these substances in view of their importance in oil production.

Summary

1. A study has been made of the clay minerals associated with the Bradford sand by means of (1) differential thermal analysis, (2) X-ray spectrometer and (3) the electron microscope.

2. Illite appears to be the chief clay mineral occurring in the sand with small amounts of Kaolinite and Montmorillinite also being present.

The first and last of the above minerals swell in the presence of water and could therefore be responsible for a reduction in water rates in water flooding.

4. The presence of certain strong exothermic peaks in the differential thermal analysis curves indicates the possible presence of adsorbed organic material. This raises some interesting questions on the migration of petroleum into a reservoir.

Acknowledgements

The writers wish to acknowledge the help of Dr. P. D. Krynine of the School of Mineral Industries in the microscopic examination of one of the samples.

Reference

[1] "Differential Thermal Analysis" by Spiel, Berkelhamer, Pask, and Davies, U. S. Bureau of Mines Tech. Paper No. 664.

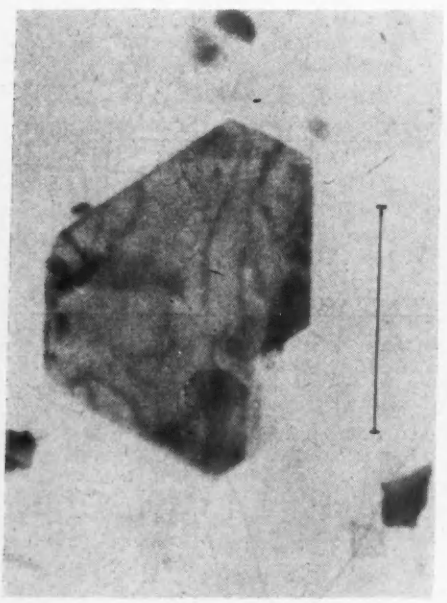


Figure 3. Typical micaceous particle found in minus 400 mesh fraction in oil sand.

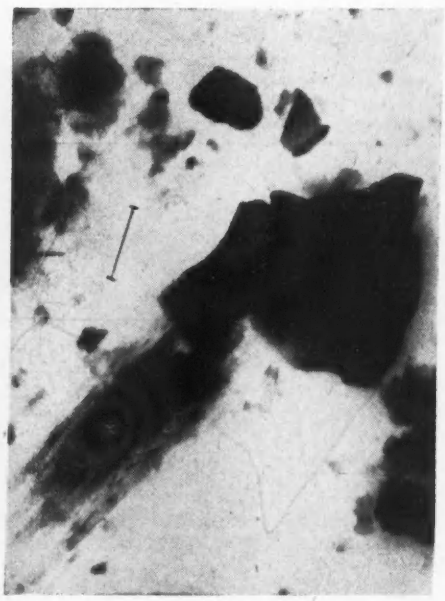


Figure 4. Shreddy aggregate is structure characteristic of swelling mineral.

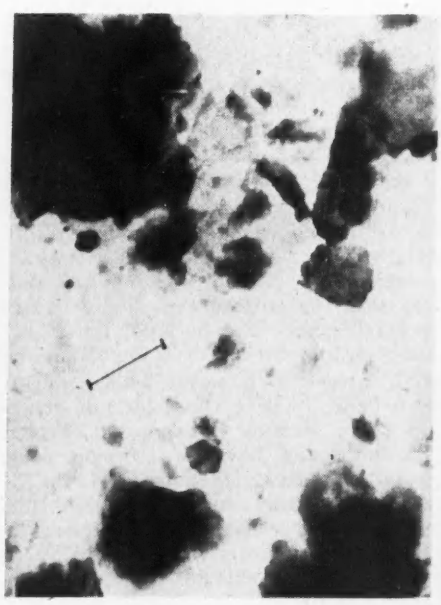


Figure 5. Micaceous aggregate found in shale associated with oil sand.

NETHERLANDS EAST INDIES

REHABILITATION

By THEIR attack on Pearl Harbor in December, 1941, the Japanese automatically cut themselves off from their main sources of oil supplies in the U. S. and the Netherlands East Indies. They had, of course, expected such a situation and had in anticipation built up stocks of crude and products as is borne out by the figures in Table 1, showing production, imports and consumption of crude and derivatives in Japan in the prewar years.

The solution was obvious. The Japs looked to the East Indian Archipelago as a potential source of supply for the needs of their war machine.

These countries, however, were prepared. As it was evident that the rich oil fields of Miri and Seria, on the northwest coast of Borneo, could not be defended against the overwhelming force that Japan in its first attack was expeced to employ and actually did employ, the manager of the Sarawak Oilfields, Ltd., an associated company within the Royal Dutch Shell Group, called his staff together December 8, 1941, to announce the decision of the British government to sacrifice the work of decades: to destroy the refinery and oil fields in Sarawak and British Borneo.

The destruction was carried out with grim determination by the men who had helped to build the vast complex of wells, connections, pipe lines, gathering systems, storage and refining equipment, and needless to say, it was done with sad hearts.

In one week the work was completed and when the Japanese entered Miri by the middle of December, 1941, they found only the ruins of what once had been a flourishing industry.

Tarakan Next

The next target was the island of Tarakan, off the northeast coast of Borneo and belonging to the Netherlands East Indies. All preparations had been made and the attack on January 10, 1942, was not unexpected. The Dutch garrison defended the island in a man-to-man fight but was helpless against the overwhelming odds and therefore the previously prepared order for destruction was given. Approximately 400 producing wells were destroyed by explosives and by dropping the tubing in the holes, and the pumping equipment was blown up. When the attack was under way on the night of January 10, 1942, all tanks were destroyed and with them some 100,000 tons of oil. No tank remained standing.

Effectiveness of the destruction can be judged by the rage of the Japanese when their experts inspected the wells. They sent a message to Balikpapan, threatening all European inhabitants with death in case oil installations should be destroyed.

After the fall of Miri, Seria and Tarakan, the next move was directed against the important oil center of Balikpapan, on the east coast of Borneo. Notwithstanding the warning, Balikpapan was destroyed January 22, 1942, when a large enemy fleet was reported approaching. The small oil fields at Boela, on the island of Ceram, followed on or about January 30, and also at about the same time, the oil fields and the Babo operations center in New Guinea.

The oil fields in the South Sumatra area tributary to the Pladjoe refinery were destroyed February 14, 1942, after the Japs had dropped paratroops on the Pladjoe refinery. Shortly afterwards, the installations at Pangkalan Brandan and Pangkalan Soesoe, in North Sumatra, and the Java refineries at Tjepoe (Rembang) and Wonokromo (near Soerabya) were also destroyed.

It is beyond the scope of this article to dwell upon the human suffering that was caused by the ruthless attacks on these formerly peaceful settlements, but it can well be imagined from the now known fact that 25 percent of the staff employed at the outbreak of hostilities were killed, died or are missing.

What the destruction means in value can only be very roughly estimated.

The stocks of crude and products destroyed at the outbreak of hostilities in the East Indian area can be estimated at 7,785,000 barrels. Adding to this an estimated figure of 70 million barrels brought to the surface by the Japs during their 3½ years of occupation, the total loss can be set at about 77 million barrels.

Japs Prepared

Jap activities during the time of occupation are not yet fully known. It is clear, however, that the Japs were well prepared to take over the oil industry. According to reports some 150 drilling outfits were brought into the region.

A brief outline is given below of what it at present known of each oil area in the East Indian Archipelago.

Seria and Miri: These oil fields were recaptured from the Japs in July, 1945. The enemy in his retreat had fired the flowing wells at Seria and blown up all major installations. By the end of September, 1945, all fires had been extinguished and rehabilitation in the fields was proceeding, while reconstruction of the badly damaged refinery at Lutong had been started. Drilling was resumed early in 1946 and regular shipments of crude from the area began in March, 1946. Present daily production is 10,600 barrels, which is expected to increase substantially by the end of the year.

TABLE 1

In Metric Tons*	Production	Imports	Consumed	Excess Over Imports
1929.....	.....	1,393,000	1,723,000	330,000
1937.....	362,000	4,770,000	4,742,000	28,000
1938.....	368,000	5,800,000	3,749,000	2,051,000
1939.....	.....	5,100,000	4,044,000	1,056,000

* 7.785 barrels equal one metric ton.

Tarakan: This island, lying off the east coast of Borneo, produced before the war 2000 metric tons (15,570 barrels) of crude daily from 580 wells. The characteristics of the oil is such that it can be used as diesel or underboiler fuel after a simple dehydrating process.

The Japs drilled 173 new wells. The amount of oil extracted by them is not known. One estimate sets it at 800,000 cubic meters (about 5 million barrels). After the recapture of the island in May, 1945, the field appeared to have been destroyed by the Jap occupation forces. Repairs started immediately after the reoccupation and production was resumed as early as June, 1945. By the end of 1945, 255 wells were ready to be put into production. The scarcity of material and supplies hampered speedy rehabilitation. It is hoped, however, that it will be possible to increase the storage and pumping facilities to such an extent that by the end of 1946 a quantity of 30,000 metric tons (233,550 barrels) or 50 percent of the prewar figure, can be handled.

Balikpapan: The refinery situated at Balikpapan (on the east coast of Borneo) was destroyed January 22, 1942, by the Dutch, when there was no chance of holding their position against the advancing foe. A thorough job was made of it and it took the Japs a long time to put part of their apparatus into commission again.

When, in 1945, the Allied troops recaptured the area, the Japs in turn destroyed everything they had rebuilt which had escaped Allied bombing.

The Balikpapan refinery was a complete plant with a crude charging capacity of 6000 metric tons (46,710 barrels) daily. It included a waxplant and lubricating oil plant and such auxiliaries as drum- and can-making factories. All these installations were put out of action and it is evident that the reconstruction will take much time. One crude pipe distilling unit, with a capacity of 600 metric tons (4761 barrels) per day, has been repaired and is operating. A second unit of the same capacity is being repaired and will be put into commission shortly and preparations are under way to further increase the distilling capacity.

In order to be able to handle the oil, two 5000 cubic meter (31,000 barrels) tanks for diesel oil and two of the same size for boiler fuel were repaired and by the end of May it was possible to

handle oil from and to ships over two wharves.

A loading speed of 100 cubic meters (628 barrels) per hour, modest as compared with prewar rates, but gratifying as a sign of recovery. was obtained.

Balikpapan depended before the war to a certain extent on imports of crude from other fields because the adjacent Borneo fields from which production is piped do not provide sufficient supplies of crude.

Before the war, the Sanga Sanga, Anggana and Sambodja fields produced approximately 2500 metric tons (19,462 barrels) of crude daily from about 450 wells.

Big Task Remains

The crude is mainly waxy. Practically all wells were wrecked, and therefore an enormous task of repair lies ahead. The rehabilitation work started much later than at Tarakan but at present eight repair crews are rehabilitating the damaged wells.

At Sanga Sanga the Japs had constructed three large earthen reservoirs for crude storage, the contents of which are now gradually being pumped into tanks. A total of 35,000 cubic meters (219,800 barrels) has been recovered in that way.

The Tandjoeng field, situated approximately 200 kilometers (about 104 miles) southwest of Balikpapan was undamaged. This field was opened shortly before the outbreak of the war and since facilities for gathering and transporting oil from the eight flowing wells to the nearest refinery or shipping point had not yet been erected at the time of the Jap invasion, the field was of little use to the enemy, and the wells were left intact.

When the Dutch returned to Tandjoeng after the Jap surrender, they found that a makeshift topping plant had been constructed. From disconnected data it appears that the Japs processed at one time about 1000 barrels of crude per month.

The topping plant is now being used to make gasoline, kerosine, diesel oil and boiler fuel. In November, 1945, one well was flowing at the rate of 50 cubic meters (314 barrels) a day to supply the charging stock for this small plant. A similar primitive topping plant was built by the Japs in the Sanga Sanga field and it is now also being adapted to produce gasoline, kerosine, and diesel oil.

Ceram: Information concerning the small fields on this island, Beela and Lemoen, is at present unavailable. The prewar production amounted to nearly 300 metric tons (2335 barrels) of oil per day. The remoteness and comparatively small importance of Ceram compared with the pressing needs of other areas have been the reasons that the rehabilitation work could not be taken in hand earlier.

Dutch New Guinea: In this territory, one of the world's most intensive exploration campaigns was embarked upon in the 1930's by the Nederlandsche Nieuw Guinee Petroleum Maatschappij, a company in which the Royal Dutch Shell, Standard-Vacuum Oil Company, Standard Oil Company of California and The Texas Company are interested.

Before the outbreak of World War II, three fields, namely Klamono, Wasian and Mogoi, had been discovered in the so-called Vogelkop portion of Northwestern New Guinea.

Before the New Guinea areas were captured by the Japs as much as possible was done to render these developments useless to the enemy, and because of the remoteness of this region information on the present condition of the fields is extremely fragmentary. It is not supposed, however, that the Japs made any serious effort to produce the three New Guinea fields.

At the present time vigorous preparations are being made to resume operations in New Guinea.

South Sumatra: The Pladjoe refinery is on the south bank of the Moesi river near the town of Palembang and alongside the Soengei Gerong refinery of Standard-Vacuum. On February 14, 1942, the Japs launched an airborne attack on the Pladjoe refinery which resulted in the loss of this plant after a brief but fierce struggle. Since Japanese paratroopers were dropped in the Pladjoe refinery area, the prearranged demolition program could not be carried out as planned and only improvised measures could be taken. As a result the destruction of this refinery was not so complete as that of the others.

The prewar crude distilling capacity was about 8000 metric tons (62,280 barrels) daily, and was, according to the last available report, reduced to 3500 metric tons (27,247 barrels).

The refinery was complete and consisting of a cracking unit of 1000 metric tons (7785 barrels) daily total intake; two Edeleanu plants, one for gasoline and one for kerosine; and two reforming plants for gasoline reforming with a daily intake capacity of 1000 metric tons each. There were also a vacuum distilling plant of 1800 metric tons (14,000 barrels) daily intake capacity, and an iso-octane and alkylation plant.

Although extensive repairs will be required, it appears that all these installations can be used again. In 1943 the Japs started to construct a Knowles coke plant which they finished in December, 1944. When, in January, 1945, they started operation, it was attacked by Allied bombers which put the installation out of action.

Japs Worked Fast

The oil fields were put out of commission according to pre-arranged plans. The Japs, however, prepared as they were, succeeded in the comparatively short time of one year in restoring production to some extent. It has not yet been possible to investigate the condition of the wells in this region so that it is not known whether or not the enemy obtained a high rate of production by indiscriminately opening up the flowing wells without regard to ultimate recovery. Some 60 wells, however, were drilled, which undoubtedly have contributed to the speedy recovery.

It has been impossible to make any appreciable progress in the rehabilitation of this important oil center, because of the local political disturbances fostered by the Japanese.

Pangkalan Brandan: The refinery here is on the Babalan estuary on the North East coast of Sumatra. It is equipped with two crude oil distilling units with an aggregate capacity of 3000 metric tons daily (23,355 barrels). It also contains a gasoline Edeleanu plant, but no cracking facilities. The refinery, as well as the fields, were demolished when the Japanese approached in 1942, all according to the prearranged plans. No details are available, however, as to the extent of the demolition. According to reports received from Japanese sources, one pipe distilling unit of a capacity of 2000 metric tons (15,570 barrels) of crude daily was still usable, although it was partly destroyed in an Allied bombardment in January, 1945. The Japanese then attempted to transfer two furnaces and one fractionating tower with which to erect a topping unit of 500 cubic meters (3140 barrels) daily at Sawit Sebrang. They also erected at Langsa a small two-still topping unit of 35 cubic meters (220 barrels) crude capacity daily. The gasoline Edeleanu plant is reported destroyed beyond repair. The tank installations at Pangkalan Brandan and the terminal, Pangkalan Soesoe, situated 15 kilometers (about 10 miles) from the first named locality, had a prewar capacity of around 400,000 cubic meters (2,512,000 barrels). Here a great number of the larger tanks have been destroyed by allied bombing and the total storage capacity is now about 150,000 cubic meters.

Figures about the quantity of crude produced and processed by the Japanese are very incomplete. The principal production seems to have been obtained from the prolific Rantau field. The comparatively new field, Paloeh Taboehan, was tapped rather intensively by the Japs. It is estimated that they extracted from all fields in the north of Sumatra some 1,400,000 cubic meters (8,792,000 barrels) of crude.

Apparently they found some time for wildcatting, as one well was sunk near Tandjong Poera (near Pangkalan Brandan) and one near Iee Tabeu (in Acheen) while a well site was in course of preparation near Belawan, the deepsea port at the east coast of Sumatra.

Owing to political difficulties, the operating personnel have not yet been admitted to the North Sumatra area, so that it has been impossible thus far to check the accuracy of the above information.

Java: On this island, a very densely populated area, Royal Dutch Shell had one refinery at Tjepoe, near the small port of Rembang, and a refinery of limited capacity at Wonokromo, near the port of Sourabaya. The refinery at Tjepoe consisted of two crude distilling units, one pipe still unit, and one continuous still batery; also a cracking plant, a waxplant and candle factory. The throughput amounted, in prewar days, to about 1000 metric tons (7785 barrels) of crude daily.

According to unchecked information, the above mentioned pipe still unit was restored by the Japs in 1943, but the condition was very bad; and the continuous still battery which was destroyed by the Dutch before the Japanese took possession was not rebuilt.

Before the war the fields in this region produced some 2000-2500 cubic meters (about 9700 barrels) of crude daily, which was considerably more than required as charging stock for the Tjepoe refinery. The excess was shipped elsewhere for processing. It is reported that the Japs reverted to this practice when the fields were put into production again. In the Kawengan field there appears to have been three steam-driven drilling rigs working but no information is available as to the number of wells drilled. A very rough production estimate based on unchecked information was drawn up. This places the total crude obtained by the Japanese from the Rembang fields in the years 1942 up to their capitulation in

• CONTINUED ON PAGE 61

Petroleum APPRAISAL AND FINANCING

By E. M. REED, Oil Loan Department, First National Bank, Houston

THE appraisal and financing of the petroleum industry has assumed a growing importance in recent years, augmented by new operating concepts as we move deeper into an era where petroleum products are essential in all phases of economic activity. Technically trained men specializing in appraisal work have made a valuable contribution to the financial structure of the industry by the preparation of valuations which have reflected the asset position of the company or individual and permitted them to obtain financing for their future operations.

Petroleum as it is being produced decreases the asset position of the operator insofar as his oil reserves are concerned. Therefore, he must resort to additional expensive exploration activities to maintain or increase his oil reserve position. Frequently, his existing income, though large, may be insufficient to cover these expenses, and will require additional borrowing on collateral which he has previously pledged to a financial institution. The collateral at the date of the subsequent application obviously will have declined in value due to the process of depletion, and assuming no change in the price being paid for crude. The then existing present worth of the collateral and the expectation of a satisfactory future economic trend may justify the request for additional funds. Therefore, what initially started out to be an oil loan to be amortized over a period of three to four years might actually run for five to eight years before any additional collateral may be available or any subsequently pledged.

On matters subsequent to the initial loan, the appraiser can also render valuable service to the lender in determining the margin of safety in making additional loans. However, of paramount importance is the appraiser's responsibility to advise whether the subsequent production performance of the property reflects any data which would justify an increase or decrease of the original or ultimate oil estimate. During the entire period there may be many other requests for additional financing which may be granted. Also, increased or decreased allowables may materially increase or decrease the payout period where amortization is provided for on a certain percentage of the monthly income.

Sound Performance Record

There is a tendency for some lenders to compare an oil producer's activity with that of some other commercial venture such as a manufacturer or retail dealer whose loans are for seasonal periods, whereas an oil producer may maintain an indebtedness over a long period of time. This comparison cannot be made, as the oil producer is producing a wasting asset and if he ceases his search for new oil reserves in order to retire his indebtedness he is primarily in the process of gradual liquidation. The oil producer is required to take speculative risks, therefore, by nature he is optimistic. Financial institutions must maintain a high performance record on their lending activities, otherwise excessive losses in a key institution can bring serious repercussions to the community or the nation. The lender may be termed conservative, but the word has too many implications and it might be said he must exercise sound judgment. Therefore, in oil financing this must be implemented by the competent advice of an appraiser either on the institution's staff or on a consulting basis. Those financial institutions which have specialized in financing the petroleum industry and fully understand its many operating problems have had a high record of performance which reflects to the credit of the members of the petroleum industry.

It has been inferred that the petroleum industry is a speculative business. This is true of certain activities; however, applying this term too generally may bring some apprehension to the novice who is considering engaging in financing activities. Let us consider the various divisions of the oil business and the allied natural gas and gas-distillate business. The divisions can be classified as follows:

1. Exploration
2. Producing
3. Transportation
4. Refining
5. Marketing

Of these classifications only exploration can be defined as speculative. Yet, financing is safely applied to drilling contractors, geophysical companies, equipment manufacturers, and material dealers for their business activities, as connected with exploration.

The most important division from a financing viewpoint is the producing section. All subsequent classifications are dependent upon this branch of the petroleum industry. The first consideration in the financing of a major integrated company is its oil reserve position. However, let us first consider an individual lease that is fully developed or is in the stage of development. Both cases can be readily financed and on the latter a loan can be advanced on each well as completed, where its production performance is satisfactory, and even the cost of dry holes can be allowed where the previously developed oil reserve is sufficient to support them. The financing of only one oil well on a property is not considered advisable unless supported by other collateral or dependence on an endorsement supported by a financial statement indicating a sufficient net worth. When two wells are completed on the lease and the appraiser's estimate of the present worth of the wells is sufficient to support the loan application, then dependence can be placed on the property.

Transportation Division

In the transportation division, pipe line construction can be financed where the operator has an adequate oil reserve or contracts for a sufficient duration both for the purchase and sale of crude. This is equally applicable to proposed barge lines for crude transportation. In either case accounts receivable, as in any commercial venture, are acceptable collateral for financing, as well as certain types of equipment. Tanker shipments of crude or refined products are generally handled by large companies. However, marketing brokers require letters of credit for the handling of large shipments.

Independent refining activity is financed on warehouse receipts on crude and refined stocks in storage and accounts receivable. Financing can be advanced for plant improvement or additions. This is predicated on a satisfactory financial condition of the plant operations and the expectation of a favorable economic trend in refining activities.

The marketing operator is financed on accounts receivable and will also need letters of credit on large shipments.

In all cases the presentation of a satisfactory financial and income statement will permit financing on an unsecured basis. A financial statement is presented for the purpose of establishing a maximum credit line to afford the facility for meeting the needs of short term credit for commercial turnovers.

In the natural gas business the producer has been hampered in the past in obtaining financing due to the limitations in certain gas purchase contracts as well as a low price per thousand cubic feet of gas and a limited market outlet with no guarantee of a minimum gas take. The rapid expansion of gas transmission lines into industrial centers of the country have greatly improved the gas producers' position, both from the standpoint of a better price for gas and a more stable average gas contract which in many cases is not subject to a short term notice of cancellation. Current trends are placing the gas producer on a parity with the oil producer. Financing of gas transmission line construction is on a comparable basis to oil pipe line construction as previously discussed.

Gas-Distillate Phase

The gas-distillate phase of the petroleum industry has assumed an important place in the last decade. When a recycling operation is essential to prevent retrograde condensation of liquid hydro-

Presented before the Houston Geological Survey, September 23, 1946.

carbons in the reservoir, plant construction can be financed based on the fact that sufficient wells have been drilled to support a proposed plant operation and indicate an adequate gas-condensate reserve. Also, sufficient tests have been conducted to indicate the prospective yield of condensate per million cubic feet of gas, and the quality of the product determined as well as the prospective market outlet. On some of the smaller gas-condensate reserves an adequate technical and financial analysis may indicate that the initial high cost of plant construction may not be economically feasible. Therefore, a profit may be obtained by securing a market outlet for the gas and the recovering of the distillate by stage separation.

Some suggestions are now offered for evaluation procedure for prospective financing, also an outline of the principle types of oil estimates and some of the factors an appraiser will consider in establishing the present worth of the property or company he has under consideration.

The appraiser is a technician and will present factual data in his report to support his evaluation. In most cases he will be preparing a report for a man who has been primarily trained in financial matters, and the simplicity and persuasive manner in which he presents all essential facts will greatly facilitate the consideration of his report.

Suggested inclusions which may be helpful are as follows:

1. A geological structure map should accompany all reports, even though the report is in a summarized form.
2. Cross-sections, a graphic illustration of the producing horizon, should be included in the larger type reports and at least a type log of the producing horizon in all other reports.
3. A schedule showing the initial completion data on each well, such as the initial daily oil potential, water, tubing and casing pressures and gas-oil ratio.
4. Where the property has had some production performance, the present daily potential and the current operating status of each well should be shown. This can be combined with the initial well completion data.
5. Where the report is rather extensive, a summarized discussion of values and income should preface the report.
6. All reports should give the present income status of the property, together with any knowledge of a wide prospective variation or decline of future income.
7. All values should be discounted consistent with current interest trends. While this is a financial function it is the appraiser who is better able to judge the period over which future oil reserves will be produced.

Some of the principal methods used in the estimation of oil reserves are the volumetric, the production decline curve, bottom hole pressure decline versus cumulative production, the comparative method, potential decline, versus cumulative production, and a multiple times the monthly or yearly rate of production.

Each method is briefly discussed as follows in the order mentioned:

Volumetric Estimate

The volumetric estimate is the expected recovery of oil per acre foot of effective oil pay, times the average oil pay thickness, times the estimated productive area of a property, usually reckoned in surface acres. Consideration of the acreage spacing per well should be given in the selection of an oil recovery factor. In some cases the data available on a property will justify the addition of oil reserves to be secured beyond the actual surface limits of the property due to the prospective or evident updip, downdip or lateral oil drainage. This should be equally considered on a property which is adversely affected by offset oil drainage. An adjunct to the volumetric method is the comparison of the oil recovered to the known rise in the water table where an effective water drive is evident.

The production decline method is the recording on a graph of the production history of a property by months or years for the purpose of making a projection from the past production records for estimating the future production. The usual detailed investigation required in preparing a volumetric oil reserve estimate can be dispensed with when using this method. This data in most cases will form a curve on coordinate paper. The usual procedure is to place the data on logarithmic or semi-logarithmic paper for the purpose of obtaining a straight line projection. This was the method used extensively in the past when all oil properties were produced at capacity. It is still used on properties which are not subject to proration. In some areas where the curtailment of production has not been severe, it can be generally stated that the oil production decline pattern has been altered and a projection can be made from the production record for estimating the future oil reserve.

Bottom hole pressures plotted against cumulative oil production is used in estimating future oil reserves from a property where the expansion of gas, held in solution in the oil, is the primary expulsive force for the recovery of oil. The bottom hole pressure decline plotted on coordinate paper against cumulative production will assume the aspect of a straight line for the major portion of the life of the property and thereafter may form a curve as influenced by the limit of profitable operation. Bottom hole pressure data is also invaluable to the appraiser in determining a prospective water drive.

Comparative Method

The comparative type oil estimate is based on an equal or similar expectation of ultimate oil production from a property or field having initial daily well productions, oil pay thickness, structural and reservoir conditions similar to one or more properties or fields depleted to the extent that their ultimate oil production can be established. This type of estimate is adapted to properties where the oil is being obtained from variable porosities in a limestone or where the initial information does not give sufficient technical data. Although no two properties or fields are identical, this type of estimate has served many useful purposes in predicting the oil reserves in some new area.

Plotting well or property daily oil potentials against cumulative oil production on coordinate paper can be used in estimating future oil production in prorated areas. The results will usually form curves on coordinate paper which cannot be satisfactorily projected on mathematical paper. The best method is to accumulate type graphs on actual production performance for guidance in the projection of newly prepared production graphs. Also, percentage methods can be developed for projecting these potential-cumulative production curves. The potential - cumulative production graph will require periodic daily oil potential tests, say, on a quarterly or semi-annual basis and a more detailed production record will be required where individual well performance is to be studied.

The multiple estimate is dependent on the practical experience the appraiser has had with this method. To arrive at a future oil recovery he will apply a multiple against the current rate of production. A study of the past history of the property together with its current status will determine the multiple he will apply. Where technical data or other information desired by the appraiser is not available he can obtain good results by the application of this method.

The great variation in the physical aspects of different oil fields or properties within a field and the additional factor of proration affords the appraiser the opportunity to use and sometimes develop many ingenious methods of practical usage for estimating the future oil reserve of an individual property.

Valuations in the petroleum industry have many uses, but the following discussion will be limited to their use in the financial field.

Proven vs. Unproven Areas

In the consideration of an individual lease in the process of development, the present worth of the proven and producing reserve should be segregated from the proven but non-developed area of the lease. A present worth can be given the latter by deducting prospective capital charges or the operating profit deferred can be given as a prospective present worth, after the defrayment of capital charges. Financial dependence will be placed on the portion of the reserve being produced but information is desirable on the undeveloped portion of the lease in regard to the character of the reserve for a loan commitment per well on the additional development. Additional financial advances, however, are usually predicated on satisfactory well performance unless the prior developed oil reserve can support any subsequent deficiencies.

The present worth of an individual property is considered as the future operating profit above direct field operating expenses and capital charges and discounted on current interest trends to its present day worth and before the allocation of supervision and overhead expense, and federal taxes. Financing of an individual property is conducted on a percentage of this present worth. Supervision and overhead expense on a separate lease can be generally disregarded. In case of a complex federal tax situation, the financial institution is protected on a secured basis, as its deed of trust or mortgage will be superior to federal taxes where subsequent legal action is taken to collect a delinquent tax. The appraiser can also include the present worth of the depreciated value of the well and lease equipment at depletion which generally may represent a negligible value when compared with the value of the oil. Under current conditions, salvable equipment has a ready market, whereas at some future date secondhand equipment which in some cases may be obsolete may be a drug on the market.

Some comment might be made here on the market value of an oil property. Considerable legal interpretation has

been placed on what might be considered as a "fair market value." Generally a market value could be considered as a percentage of a present worth but under existing inflationary trends, prospective hedging against inflation, and a possible further increase in the crude price, the market value may in some cases approximate the present worth as computed on the existing crude price.

In the valuation of a property or group of properties it is preferable to compute the value of the net oil on the crude price per barrel less the production, severance or other regulatory taxes, which are deducted by the purchasing company. Operating expenses can be deducted on a gross barrel basis, as may be anticipated over the life of the property, which permits a simplified calculation. This is suggested due to the probable variation of the working interests participation in the gross production on different properties. Capital costs are to be separately deferred where the expenditures are anticipated at various future dates. The form of appraisal can be an overall condensation or computed on a yearly basis.

On an oil property which has an exceptionally long producing life based on the existing rate of production, its present worth may be computed on the existing rate of monthly production for a 30-year period, and a separate comment can be made on the available oil reserve beyond that period. With no change in the crude price or rate of production, the present worth would remain intact each successive year until the future life of the property would be 29 years. Deferment on income beyond 30 years is heavy and financing for the property will not be generally dependent on the reserve beyond this period as the limiting factor is the property's income for amortization of the loan. Limitation of income for a 30-year period originated from financial quarters and is a practical viewpoint that financial dependence should not be placed on a value dependent on income beyond this period. Slightly more than a decade ago the tendency was to restrict values to income computed on a 20-year basis, even when proration was in effect in many areas. Obviously, there are periods of increased or decreased rates of allowed oil production for certain areas which will materially affect the present worths of properties having long future lives. Lending activities are influenced by these variations in the economic trends which indicates the available income for the amortization of a loan for a fixed period.

A risk factor in a valuation should be avoided, as it is believed this tends to place some apprehension on the adequacy of the report. It would be preferable, if desired, to include qualifying remarks regarding the evaluation.

Overall Evaluation

In the overall evaluation of a company, the producing oil reserve is the primary consideration. It may not be necessary to segregate the proven oil reserves which have not been developed where the prospective capital expenditures are not large and are on leases which are partially developed. Evaluations may be summarized by leases in each field. The recapitulation can be made by fields and supervision and overhead expenses can be deducted from the total on a per barrel basis and this future expense separately deferred. In some cases the application of deferment to arrive at a present worth is dispensed with and the future operating profit only is computed.

All exploratory acreage can be set up at the book cost or at its going market value. While this type of asset is subject to considerable fluctuation as exploration progresses, the primary interest in its analysis is in regard to the company's future anticipations. Often, the exploratory prospects of a company may have a going high market value but dependence for financing must be placed in its proven oil reserve and other income facilities.

In closing, comment should be made on the oil producer's preparation of a financial statement. This is often prepared in the form of a summary of assets and liabilities. A net income statement for the calendar or fiscal year should be added, as this is an integral part of a financial statement. The producing assets may be given at their current book or market values or even their present worth. All holdings should be individually listed on appended sheets and the value of each interest given and also adequately described. Where a value has been taken from an appraisal, a summary of the evaluation should be attached. Regardless of the type of loan under consideration by the lender, the applicant will materially improve his position by the presentation of a well-prepared financial statement.

Netherlands East Indies

■ CONTINUED FROM PAGE 54

1945 at 1½ million cubic meters (11,677,500 barrels).

The refinery at Wonokrome consisted of one crude pipe distilling unit of about 300 metric tons (2335 barrels) daily intake capacity. This unit has completely disappeared. Reports suggest that it was transferred inland. More likely, it was destroyed by Allied bombing. There was and still is intact a small asphalt plant with a production capacity of some 75 kg tons (about 500 barrels) of asphalt daily. The auxiliary plant of the refinery is badly damaged.

The fields that supplied the feedstock of the refinery Kroeka and Lidah Koelon, have been found in reasonable condition. The Japs apparently succeeded in repairing the Kroeka field and by drilling 14 new wells they obtained from the entire Sourabaya area about 250,000 cubic meters (970,000 barrels) of crude oil.

Summary

Table 2 gives an overall picture of Jap activity by comparing their production with the prewar figures.

Table 2 tends to show that the enemy had made large scale preparations for repairs and as may be concluded from their proportionately important production from the Pladjoe and Java fields, which consist of a comparatively great number of flowing wells, they concentrated their efforts in the first place on flowing wells.

Under present conditions it is impossible to predict when the rehabilitation of the Sumatra and Java fields will be completed. Plans have already been worked out to resume drilling in these regions with 15 strings. Moreover, crude distilling apparatus, as well as plants to improve the quality of products, have been ordered and are ready to be moved into the area as soon as conditions permit.

In the Borneo area an eight-string drilling program is visualized, while in New Guinea the exploration campaign will be resumed with at least four strings. Fortunately, no political difficulties are encountered in these areas.

Equipment Needs

The amount of materials and equipment required for the East Indian Archipelago will depend largely on the state in which the refineries and settlemens on Sumatra will be found. According to the preliminary estimates, approximately 200,000 tons of equipment, machinery and materials will have to be procured. Some of these materials have been ordered but currency exchange difficulties have an appreciable influence on the choice of manufacturers and thus on the speed of delivery. A further contribution to the difficulty of material supply is the uncertainty whether cement and other materials, especially those for building and oil engineering, which previously were purchased locally, will be available again in sufficient quantities.

It is estimated that 600 pumping units will be required for the preliminary construction program. On order are 30 power generating units with an aggregate performance of 40,000 Kw.

Approximately 200 miles of piping will be needed for drilling and well finishing purposes. As to pipe lines and gathering systems, it is most uncertain as to what quantities will ultimately be necessary for rehabilitation, as reliable information for several areas is still lacking. Before the Japanese invasion, roughly speaking, 3000 miles of pipe lines of four-inch and larger diameter were in operation in fields, refineries and interconnections, sub-divided as follows:

4-inch 875 miles
5-inch 400 miles
6-inch 650 miles
8-inch 650 miles
9-inch 60 miles

2635 miles excl. Tarakan
say 3000 incl. Tarakan.

It is certain that the percentage of storage capacity to be replaced will be far in excess of the percentage of pipe line length to be reconstructed. Before the invasion approximately 20 million barrels of storage capacity was available.

In spite of the hampering effect of the shortage of some essential materials and of currency difficulties, the Royal Dutch Shell Group is now actively engaged in organizing the gigantic task of rehabilitating, in a few years, the destruction caused by a wanton enemy to fields and refineries which took many decades to build.

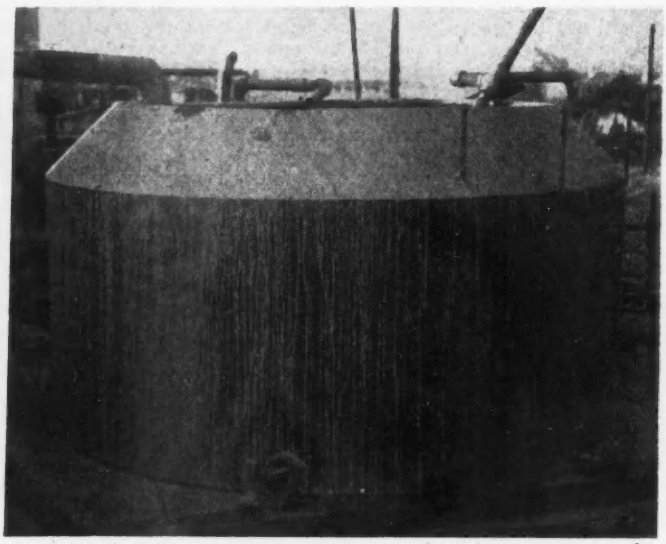
TABLE 2

Annual Crude-Production in Known Areas in N. E. I.

(In American Barrels)

	Prewar (1941)	Avg. Annual Yield Under Japs	Percent of 1941
Tarakan	4,730,000	1,493,000	32
Pladjoe	16,631,000	10,044,000	60
P. Brandan	5,853,000	2,613,000	45
Java	4,503,000	3,266,000	72
Total Known Areas	31,717,000	17,416,000	55
Balikpapan	6,819,000	unknown	..
Ceram	697,000	unknown	..
Grand Total	39,233,000		

Semi-Enclosed Mixing Tank Prevents Mud Splatter



MUD MIXING

A mud mixing tank that has ample capacity yet may be used with a minimum of splatter over surrounding equipment and walk-ways, is being used successfully by one company. It consists of a conventional cylindrical tank, the top of which is partially truncated as shown to prevent slopping and splashing of the contents. Mixing gun and other lines are mounted atop the tank in conventional manner. The tank is mounted to a plank-surfaced I-beam skid base, steel ears placed at intervals around the tank base securing it rigidly to the platform. The suction line extends out several feet over the platform and to give it rigidity, a triangular steel plate was welded to the pipe and bolted to the planking forming a solid support.

The all-welded tank has considerable strength, some of it attributable to the construction of the truncated portion. The rim of this section is strengthened by the addition of a ring of 1-inch pipe welded to the inner edge.

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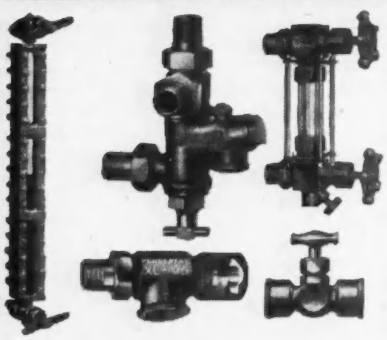

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Arm Dampens Vibrations

MUD LINES

On a drilling rig where it was not possible to clamp the standpipe close to the corner leg as frequently is done, one operator installed a stull-like spacer device with which he eliminated practically all vibration in the standpipe. A short length of five-inch pipe, having one end shaped to fit snugly into the V-corner of the derrick leg and the other end cut out in such a way as to leave a narrow strap which could be wrapped around the standpipe, was placed in a horizontal position between the pipe and derrick member as illustrated. After the two straps were bent around the standpipe and hammered tight, a length of rotary chain was looped around the pipe and the outside of the derrick leg, then drawn together tightly with the aid of a long bolt and nut.

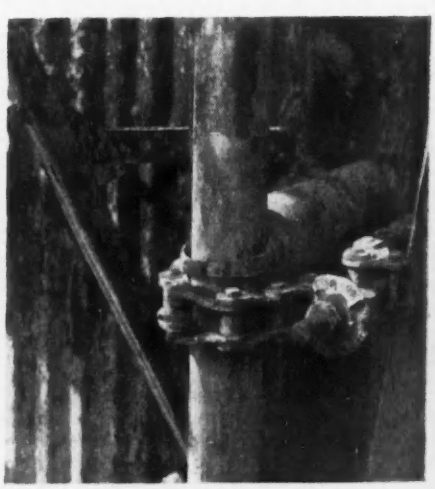
Such an installation is inexpensive, requires no special materials, can be tightened up readily should slack develop after prolonged usage, and is easily rigged up and dissembled at moving time.

Ditch Provides Drainage

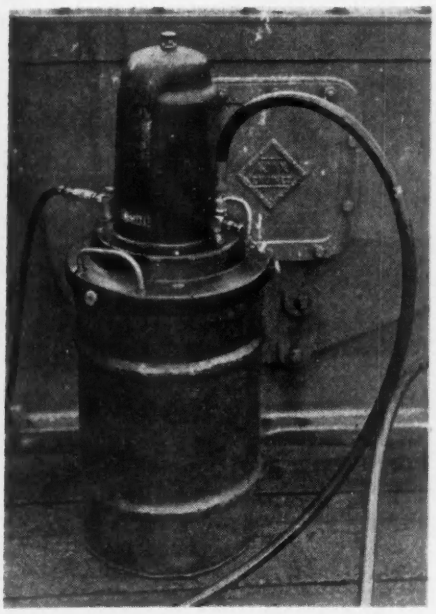
LOCATION PROTECTION

In mountainous areas where locations have to be cut out of the side of a steep slope, the problem of maintaining adequate drainage at the well site and eliminating danger of washouts or slides, must be considered in laying out the well equipment before drilling is begun. One major company operating in such terrain handles the problem by constructing a system of small drainage ditches around the edges of the concrete mattings on which are mounted slush pumps and other rig equipment. Each of the shallow ditches, typical of which is illustrated in the photograph, is provided with a shallow gradient, emptying into a connecting ditch which in turn carries the flow to a common outflow which empties into a canyon at a point where no damage will be done. Ditches are hosed down frequently to clear them of obstructions that might accumulate.

Laying out the drainage ditches requires some extra work when pouring the mat, but the security of having a well-drained location, with attendant improved working conditions for the men, is worth the extra expenditure.



Air Pressure Applied to Greasing Device



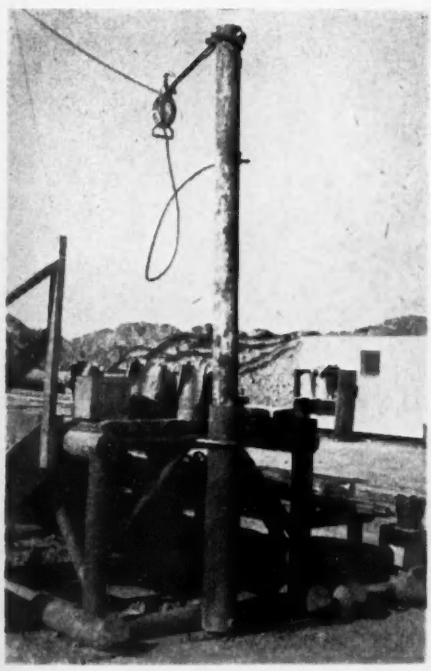
The drilling crew of one company was spared the undesirable task of repeatedly having to fill hand grease guns in periodically greasing the draw works and other rig equipment. The capacity of regular hand grease guns is not sufficient to last very long when completely greasing the drilling equipment at the beginning of every tour. Thus, it was formerly necessary that the grease chamber be filled by scooping a wooden paddle into the grease bucket and scraping the grease into the gun. Usually, the man who performed this refilling job either got grease on his hand or on the sleeve of his jumper. To simplify the task of greasing, one company constructed a greasing device as shown which has a capacity much greater than hand models. The device illustrated consists of a field application of greasing equipment similar to that found at service stations.

LUBRICATION DEVICES

In the instance described, air pressure was available from the pneumatic system employed in certain rig controls. A small, flexible, hydraulic hose was attached from the pressure source to the grease dispensing device, which was converted to fit atop a large drum of grease. The device remained in one place, normally to the rear of the draw works, while a long, neoprene rubber hose with the proper head was attached to the discharge end. The dispensing hose was long enough to reach all equipment requiring this type of grease. The discharge head was equipped with a valve through which the grease was released. With such a device, it is possible for one man to grease all equipment within range of the hose in less time than was formerly possible. Pressure was sufficient to insure an efficient greasing job while sparing the crewman an unpleasant chore.

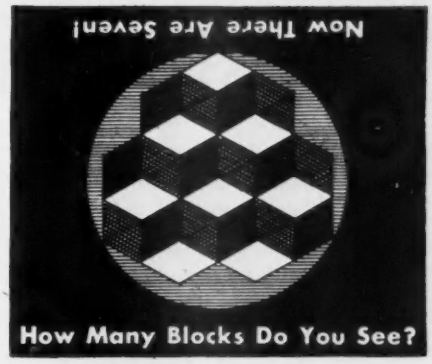
This device has eliminated the need for open buckets of grease which are dirt collectors and are always in the way on the rig floor. Considerable time is saved through the application of this greasing device, and it is self evident that much grease is also saved that otherwise would be wasted.

Telescoping Back-Up Post Speeds Rigging Up



Aiding in the rapid assembly of drilling equipment once the rig is installed, is the simple and easily rigged high-line back-up post employed by the drilling department of one company. Instead of expending time and labor on digging a hole, or pouring concrete to provide footings situated several feet from the end of the walkway, use is made of telescoping pipe sections which require only a few minutes to install. Bolted to the end of the walk is a short length of eight-inch casing, this section being fixed to the rack when moving. Inserted in this short section is a longer length of six-inch casing which has a heavy eye bolt at its upper end and which supports a sheave and high line. The simplified back-up post is sturdy and presents no problem in assembling or dissembling, it requiring only a minute or two to install the upper section. It can be installed on a convenient skid that is placed in a suitable location to handle equipment quickly and safely.

BACK-UP POST



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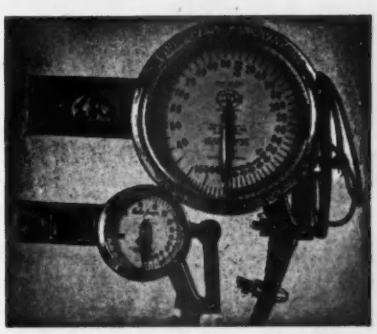

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No. 44—4	Pulleys, roller bearings,	½"	rope
No. 43—4	Pulleys, roller bearings,	½"	rope

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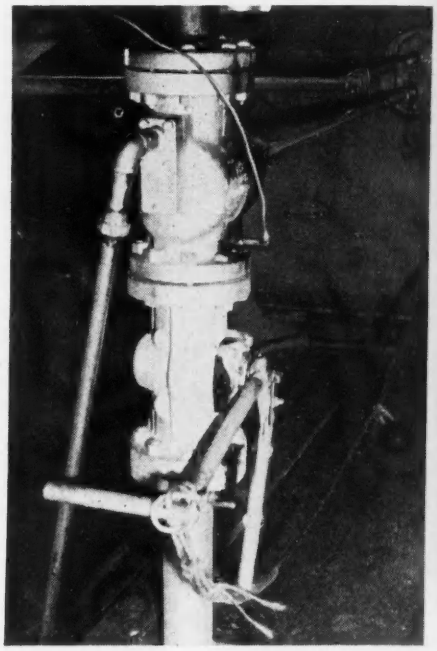
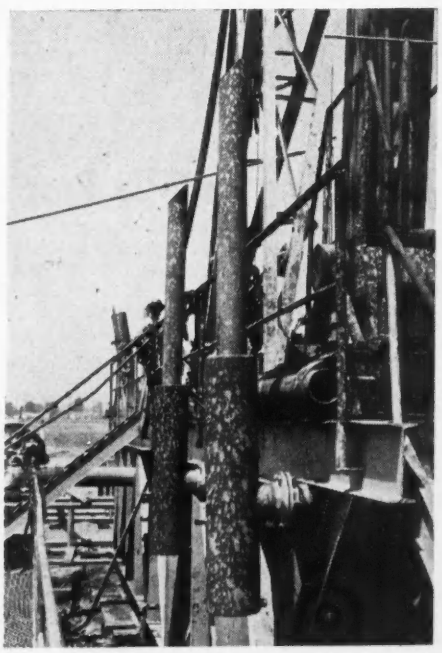


STEAM LINES

In order to adapt a plug-type valve for use as an emergency steam cutoff in the draw works steam line, good use may be made of a unique lever device which can be operated by a single pull of the emergency cutoff line. Easily made in the welding shop, the lever is in the shape of a quadrant, the outer periphery of which is a length of one-inch pipe split in half longitudinally. The regulation valve wrench is used as one spoke, and another length of pipe of equal length provides the second spoke. The wrench portion is kept on the valve stem, the handle pointing downward and the other spoke pointing toward the rear of the drilling engine. The safety pull line is brought back to and passed around the grooved periphery of the quadrant and is anchored at the far corner as shown. A quick follow-through pull of the line easily closes the steam valve, while a short horizontal pipe welded at right angles to the lever provides a limiting stop.

Unitized Exhausts Improve Working Conditions

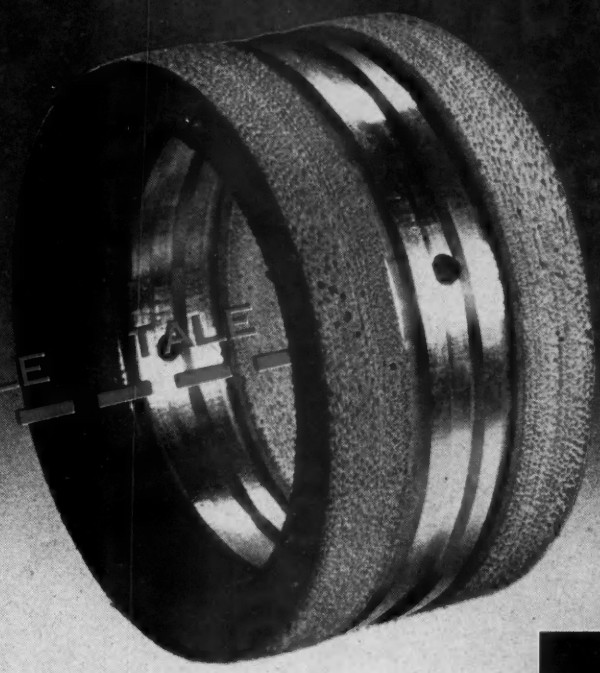


EXHAUST LINES

As a means of further streamlining the power equipment of portable type drilling rigs, one drilling contractor employs a slightly different means of leading off the engine exhaust lines. Instead of taking up valuable floor space for exhaust mufflers and pipes, the lines are carried down beneath the floor, run over to the edge of the rig, and there tied into vertical mufflers. In addition to the saving of space where it is most needed, elimination of these mufflers from the closely confined engine and rig equipment areas serves to eliminate many discomforts such as the presence of exhaust fumes, proximity of hot piping and of course much of the noise. Placement of the mufflers at the edge of the rig may require a slightly greater amount of pipe, but the advantages of this installation tend to outweight the cost factor.

Pipe flanges permit rapid connecting up and tearing down of the vertical mufflers during moving operations.

Operating hints provide a means through which oil men can exchange practical ideas that have proven beneficial in the field. The editors urge you to contribute your operating hint in order that the oil industry may benefit. Each hint submitted is carefully considered on its merits, and $5 will be paid for each acceptable idea that is accompanied by a photograph or drawing. Mail your suggestions to The Editor, The OIL WEEKLY, P. O. Box 2608, Houston 1.



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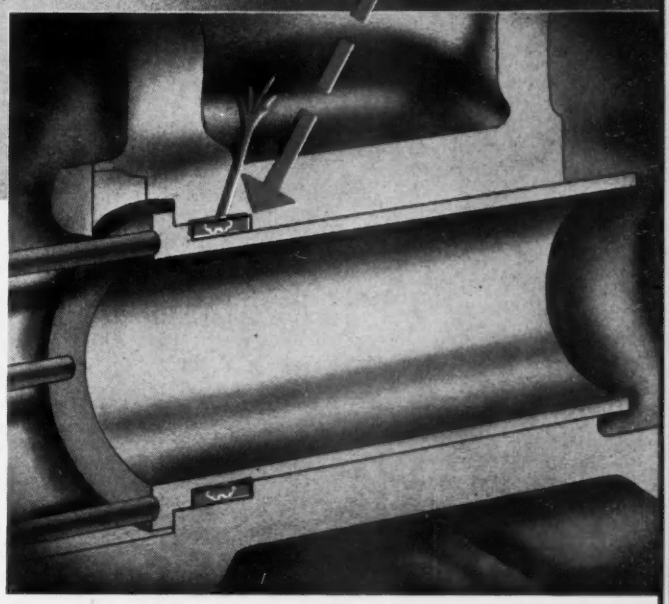


"Tattle Tale" Liner Assembly

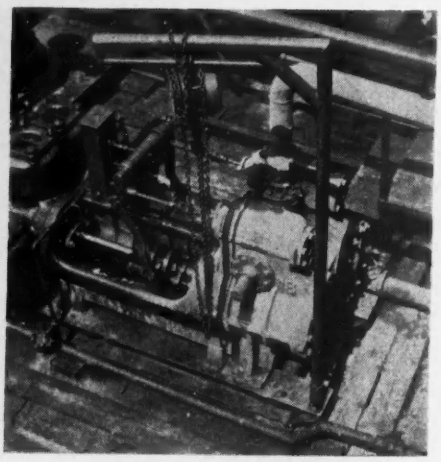
Pump liner packings don't last forever . . . so we designed a packing that tells you when it needs replacing. No more guessing . . . no more risking cut out liner sleeves or damaged pump housings due to packing leaks.

The Sterling "Tattle Tale" Liner Assembly permits a stream of mud to squirt out of the pump when replacement is necessary. This assembly consists of two hydraulic seal rings with a grooved steel lantern ring between them. Four holes around the circumference of the lantern ring allow the mud to squirt through a small, specially drilled hole in the pump housing, warning that it is time to replace the packing.

Save your pumps . . . save your liners by installing Sterling "Tattle Tale" Liner Assemblies. Immediate deliveries on sizes for all pumps. Call your Supply Store or write for information.

STERLING PACKING & GASKET CO.
(Incorporated)
Houston, Texas

Suspended Hoist Aids Pump Overhaul



To eliminate some of the back-breaking jobs which must be performed on drilling rigs, one company constructed a conveniently located bracket of 2½-inch pipe suspending a 1½-ton coffin hoist as illustrated. Purpose was to perform many of the heavy-lifting jobs in connection with overhauling the steam end of the mud pumps and connecting the pump into the steam system. A short upright collar, three inches in diameter and approximately 12 inches long, was welded to the tip of the H-beam skid. Inside this short nipple was inserted a seven-foot length of 2½-inch pipe. A horizontal arm four-feet long was supported with an angle brace as shown. Immediately below the horizontal arm was welded a 1¾-inch diameter piece of pipe suspended on the outer end by a short nipple and by the angle brace at the opposite end. This frame forms the bracket for supporting the chain hoist which is hung on the horizontal 1¾-inch pipe by the hook, which is large enough to permit the hoist to be slid along the supporting pipe.

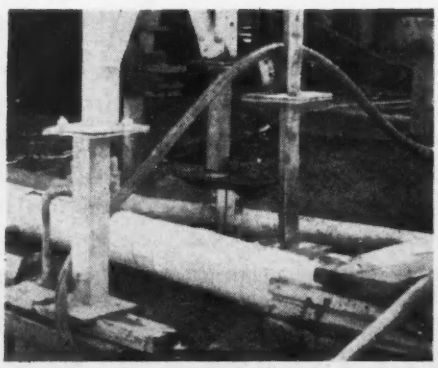
LIFTING DEVICES

The bracket may be rotated in a complete circle to handle loads within its radius. Hot steam lines may be lifted in place or disconnected for overhaul of the steam end of the mud pumps. It has been found convenient to locate several such devices throughout the rig to be used when heavy loads must be moved. While relatively slow, the chain hoist will eliminate many strains by crewmen.

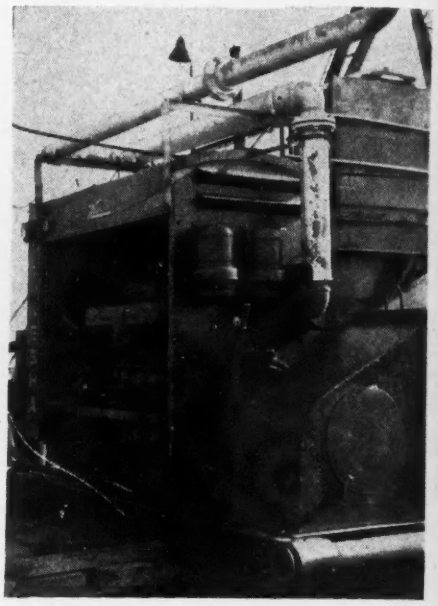
Thimbles Adjust Floor Support to Rough Ground

Use of light weight thimbles to regulate the height of derrick floor supports is saving considerable time in rigging-up operations for the drilling department of one company. Supporting legs made from angle iron material are cut to a common length, a square flange being welded to the lower end of each. To make up for irregularities in the ground surface beneath the rig floor, short thimbles made of the same material and provided with flanges top and bottom, and cut in various lengths as shown, are bolted to the supports. Blocking is used for making up minor height adjustments when necessary. The thimbles are quickly and easily bolted to matching flanges, resulting in a sturdy support that is completely salvageable for reuse at other rig locations.

RIG FLOOR SUPPORTS



Unitized Exhaust Mounting



By unitizing the exhaust pipe onto a compact mounting over the engines of its small, portable drilling rig, one company simplifies a time-consuming phase in dismantling to move the rig. With such an arrangement, it is not necessary to disconnect the exhaust system to move the power plants, but the exhaust lines becomes a part of the engine framework and is moved intact. Two rectangular angle iron brackets are installed atop the engine hood and the exhaust line mounted securely to these brackets as shown. A complete 180 degree angle turn is made with a length of the pipe flanged on the end, which section may be easily removed.

EXHAUST LINES

FITLER

LUBRICORE

There is but one genuine "LUBRICORE" Self-Lubricating Rope made and placed on the market by FITLER, patented by FITLER and easily identified as a FITLER product by the Self-Lubricating "Green Yarn Center."

Insist on "LUBRICORE" — Beware of imitations — Don't accept substitutes. Ask for "LUBRICORE," the Self-Lubricating Green Yarn Center Pure Manila Rope made by FITLER.

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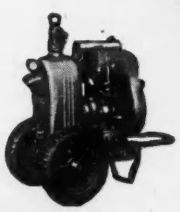
Sterling

PUMPS • HOISTS • LIGHT PLANTS



DEPENDABLE
RUGGED
SIMPLE
•
SAVE MONEY
SAVE TIME

STERLING QUALITY

For more detailed information see pages 2814 and 2815, Composite Catalog.

STERLING

MACHINERY CORPORATION

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Caging Profits with D+B *Pumps*

D+B cages are only one part of a D+B Pump assembly but the extreme care used in their design and manufacture increases the effective life of a D+B Pump. Scientifically designed to assure the free, unobstructed flow of the oil, they play an important part in contributing to overall D+B Pumping efficiency.

D+B

OIL WELL PUMPS

D+B

D+B DIVISION

EMSCO DERRICK & EQUIPMENT COMPANY

Los Angeles, California • Dallas, Texas

"PACEMAKERS IN OIL FIELD EQUIPMENT DESIGN"

Two Practical And Useful Adaptions Of The U. S. Army Truck To Pipe Line Work

One company doing considerable pipe line and field welding work, upon securing one of the

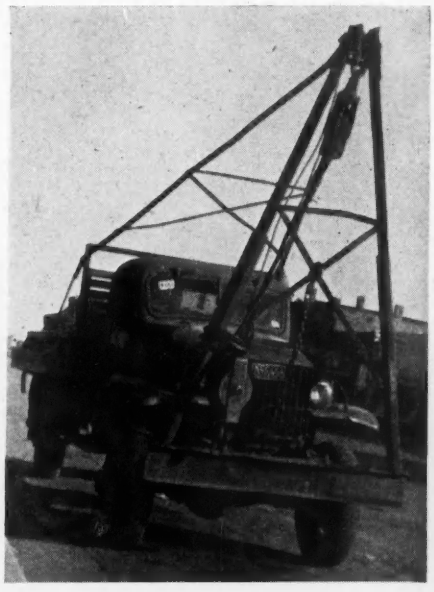
TRUCK EQUIPMENT

heavy Army field trucks equipped with a small power winch at the front of the vehicle, succeeded in designing and building up a small but unusually efficient hoisting frame suitable for practically any type of light field pipeline and repair work. The small hoist was built largely of salvaged tubing welded to the top of the heavy channel iron bumper, as well as to other supports which are attached to the frame members flanking the winch.

Another feature adding to the utility of the device is the provision made for adding a short mast which may be stepped in a pipe socket welded in place over the winch and with the pole resting in a U-shaped strap-iron holder welded to the top of the A-frame structure. For most light work, the pole probably would not be required, but for longer reaches and for handling certain types of jobs requiring a mast, the extra unit may be added to the framework. A roller attached to brackets welded on the bottom side of the heavy bumper, allows the line to be taken off the reel from beneath the bumper, up over the sheave and down to the work. Facilitating rigging up of the mast are two single steps, made of sucker rod material, which are welded, one on each side, to the frame between the winch and front tires of the truck.

The winch assembly is simple, and is easy to make in any welding shop. Numerous jobs in the field can be performed with the unit, saving its cost many times over in man-hours ordinarily spent in manhandling heavy equipment. Another advantage that soon makes itself apparent to the truck driver lies in the fact that the winch, in being mounted on the front of the truck, permits him to see at all times just where he is driving and how the load is being supported, without having to strain his neck to the rear as would be necessary were the hoist mounted on the rear of the truck as in most field installations.

With four-wheel drive and cleated tires, these trucks are capable of handling heavy loads with ease and safety.



For hoisting and transporting heavy objects from place to place about the lease, one operator obtained a surplus four-wheel drive army truck and mounted an inverted Vee, cross-braced steel frame on front to form a portable hoisting machine.

TRUCK EQUIPMENT

The regulation bumper was removed and was replaced with a 6-foot length of 8-inch I-beam. The I-beam was drilled with holes to match those of the bumper supporting arms.

Between the 8-inch I-beam and the lower front surface of the radiator cage a small truck winch is mounted with the shaft bearings attached to the under surface of the projecting bumper supporting arms.

The winch is fitted with an encased worm gear on one end. The worm gear in turn is driven by a drive shaft with a universal joint at each end. The drive shaft is connected to a transmission take-off spline on the front side of the truck's transmission housing.

The lower members of the inverted Vee frame are two 4-foot lengths of 6-inch channel steel. The upper side members of the inverted Vee frame are discarded pieces of 5-inch bridge channel steel which are securely welded to the lower members. The inverted Vee frame is mounted so that it tips forward from the vertical at an angle of 10 degrees.

A clevis is mounted at the apex of the Vee frame for securing the stationary double sheave block.

The top of the inverted Vee frame is braced back over the truck cab with long strips of rectangular section steel with dimensions of 2 inches by ½-inch.

The traveling block has three sheaves, thus giving a mechanical lifting advantage of six.

The hoisting line is half-inch soft laid wire line.

BRITTON & CLARK
offers you
PIPELINE CONSTRUCTION
with
Personal Supervision
on ALL jobs

Specialists . . .
Pipeline Construction
Marine Construction
Reconditioning Pipeline Work

Equipment . . .
2 Complete Spreads of equipment, capable of handling up to 26 inch pipe

BRITTON & CLARK
CONTRACTING CO.
401-423 N. Main St. Fort Worth 6, Tex.

Worthmeyer's OIL COMPANY

INTER-OFFICE MEMO

FROM: Vice-President in Charge of Operations.

TO: Drilling Superintendent

At last report our gas-injection well x x x x was giving a lot of trouble, leaking in control head and around gates. Several attempts to kill the well, in order to make repairs, had failed. What is the situation now?

Worthmeyer's OIL COMPANY

INTER-OFFICE MEMO

FROM: Drilling Superintendent

TO: Vice-President in Charge of Operations.

Everything O.K.:--job finished this A.M.

As you know, this job was a tough one. Tubing pressure in this well is 2300 psi; casing pressure is 1900 psi. We found the tubing plugged at the bottom, so we couldn't circulate mud to kill the well. Gun perforating the tubing was the only answer, but we doubted it could be done; blowout preventer packing was so tight, because of the high pressure, that it seemed impossible to get a gun down the well.

But we called McCullough and they did the job. Ran in their 1¾" diameter sectional gun on a piano-wire measuring line through their own packing head, and shot 4 holes, ⅜" diameter, at 6700 feet, using their special deflecting bullet to avoid any possibility of casing damage. Job completely successful. We killed the well without trouble, made repairs and now everything is O.K.*

*Based on the actual records of a recent McCullough job.

Just one more proof that

McCullough

PUTS THE SHOTS WHERE THEY COUNT

22

SERVICE LOCATIONS

McCULLOUGH TOOL COMPANY . . . 5820 S. Alameda St., Los Angeles 11, California

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TEXAS: ALICE, CORPUS CHRISTI, HOUSTON, McALLEN, ODESSA, TYLER, VICTORIA, WICHITA FALLS
OKLAHOMA: GUYMON, OKLAHOMA CITY **MISSISSIPPI:** LAUREL **NEW MEXICO:** HOBBS
CALIFORNIA: AVENAL, BAKERSFIELD, LOS ANGELES, SACRAMENTO, VENTURA **WYOMING:** CASPER
LOUISIANA: HOUMA, LAKE CHARLES, NEW IBERIA, SHREVEPORT

Trenching it's BUCKEYES

They dig trench in any soil with the kind of speed that is helping our nation out of a crisis. The tough, compact Model 11, smallest of the Buckeye Pipeliners, for small crude lines and gasoline and natural gas lines. Model 12 for medium lines; Models 32 and 48 for main lines.

BUCKEYE TRACTION DITCHER COMPANY
Findlay, Ohio
Built by Buckeye
TRENCHERS. SHOVELS. CRANES
BACKFILLERS. TRACTOR EQUIPMENT.

PIPELINE "Know-how"

F. A. (Arnold) Smith
Partner

PIPE LINE COMPRESSORS DITCHERS DOZERS
CONSTRUCTION WELDERS TRUCKS TRACTORS

SMITH CONTRACTING COMPANY
ODESSA, TEXAS

MAIN BUSINESS OFFICE
FORT WORTH NATIONAL BANK BLDG.
FORT WORTH 2, TEXAS

Umbrella Stand Serves as Ground for Welding Pipe Lines

WELDING AIDS

Field welding of pipe lines involves long hours of work in the hot sun, a condition which affects the welder and cuts down seriously on his efficiency. Most welding spreads provide umbrellas, of the type used on farm wagons, to shelter the welders from the sun. Where terrain permits, the staff of the umbrella may be stuck into the ground to hold the protection over the joint to be welded, but other than near midday, this method is unsatisfactory, due to the angle of the sun's rays. One welding contractor mounts the umbrella handle on a curved strip of steel, cut from pipe the size on which the spread is working. This strip carries a socket into which the wooden staff fits, and which is heavy enough to forestall bending, even under a stiff breeze. The strip also is attached to the end of the ground cable of the welding circuit. Preparatory to making a weld, the umbrella is properly located so as to shade the abutting pipe ends, and then an arc is struck to weld the end of the curved end which is in tension to the bare metal of the pipe line. A relatively small bead suffices to attach the holder, establishing contact for the welding circuit, and maintaining the umbrella in the desired position. The weld completed, pulling the handle toward the weld breaks off the attaching bead, and releases the setup for the next weld.

When spotting the device, the helper holds the umbrella's wooden staff or handle, so as to avoid possibility of grounding the welding current.

Small Suction Dredge Economical and Practical

DREDGES

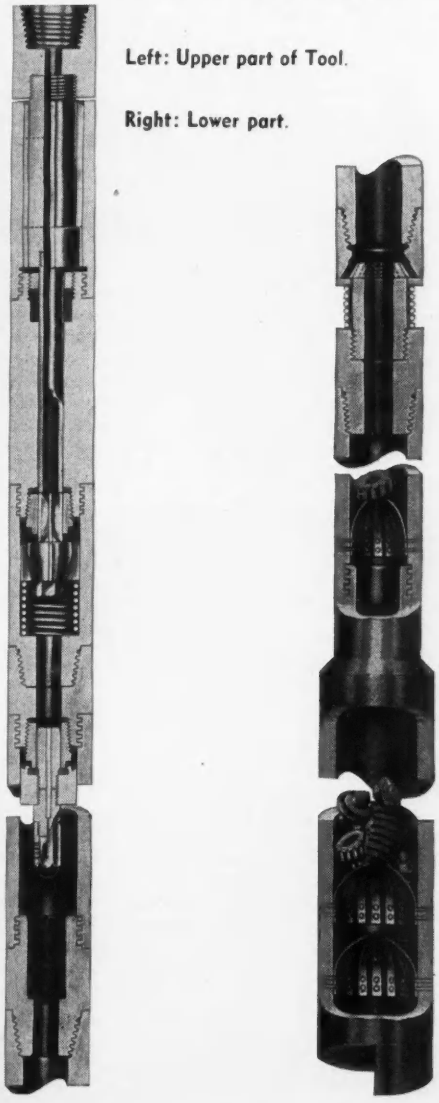
Small creeks and draws frequently present unique problems in pipe line construction. Where such problems occur it is impractical and expensive to employ large dredges to clear small river bottoms and do necessary trenching for laying small diameter pipe. To meet this condition, one pipe line construction company designed a four-inch suction dredge or sand pump which has proven very satisfactory, and is now in operation along small creeks and rivers in Georgia and Mississippi where the company is doing pipe line construction work. Approximately 20 feet long and eight feet wide, the barge is constructed of welded plate steel. A gasoline engine drives a centrifugal pump located in the center and near the rear of the barge. The super-structure is of suitable piping and is provided with hand winches which raise and lower the suction hose boom. Such a device is practical and economical in making small crossings.

NEW EQUIPMENT
LITERATURE

For additional information, use mailing card inserted opposite this page

1—Fishing, Cleanout Tool

A new principle has been employed in the design and construction of this fishing and cleanout tool. It is run into the hole on the drill pipe which is "floated in," producing an unbalanced hydrostatic pressure between the inside and outside of the drill pipe. When on bottom, a sliding section of the tool opens a standing valve placed in the upper section of the tool, permitting a surge of fluid into the tool and up into the drill pipe. This surge is limited by a floating choke and sliding valve that allows about ten feet of fluid into the pipe each time the drill pipe is lowered and raised, thus actuating the standing valve.



Left: Upper part of Tool.

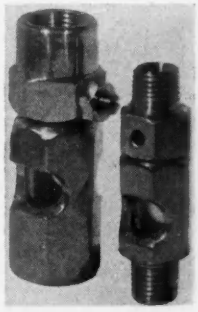
Right: Lower part.

A normal helical face is formed on the contact edge of the junk barrel, which is somewhat larger in diameter than that of the tool body. It is not necessary to use go-devils, wire lines, or sinkers to operate the tool. Rotation of the pipe tends to center the junk in the bottom of the hole, while the upsurging fluid will carry any pieces which have been centered in the tool into the junk barrel.

The tool is so constructed that both the floating choke and standing valve may be spaced at the most desirable point in the string. Available from The Cavins Corporation, P.O. Box 9157, Houston.

(Check item 1 on postcard for more information.)

2—Lubricating Valves



Two sight-feed lubricating oil valves have been designed for use wherever the rate of oil flow must be checked visually and regulated. They are made from hexagonal stock with large viewing windows of unbreakable plastic.

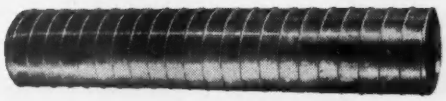
The oil flows past an adjustable port through a valve nozzle into the sight chamber where the amount of flow may be observed. A combination set and hollow lock screw permits the adjustment of flow through the valve. Adjustments are made by inserting a hexagonal key through the hollow lock screw into the set screw. A positive means of locking is thus provided. Sight feed valves are available with hexagonal bodies of ¾, 15/16, 1⅛, and 1-5/16 inches in male as well as female pipe threads of ⅛, ¼, ⅜, and ½ inch. Glass sight windows are provided for valves operating at temperatures above 150°. Manufactured by Oil-Rite Corporation, 3436 Thirteenth St., Milwaukee 7, Wisc.

(Check item 2 on postcard for more information.)

3—Spiral Tubing

Lightness in weight, extreme rigidity and low cost are advantages claimed for a spiral tubing recently introduced.

The tubing is made of spiral strips of steel or nonferrous metal with the edges joined in a continuous four-ply lock seam which is claimed to withstand 2135 pounds in tension. Weight of the tubing is such that one man can easily carry three sections, each 20 feet in length. The manufacturers recommend the following uses: ready-made concrete forms, portable irrigation systems, pillars, piers, posts, blowers, stacks, stack liners, ventilating ducts on electrical equipment, flues and backing for rubber lined pipe. It is available in diameters ranging from two to eight inches and in any desirable length. Manufactured by Pratt Industries, Inc., Frankfort, N. Y.



(Check item 3 on postcard for more information.)

4—Unitized Block

Combining a traveling block and a free-swiveling hook or link adapter connector into one compact unit is a new quick-opening unitized block developed for portable rig operations, production jobs, and similar work. The new DBH unitized block has been designed to simplify the job of changing drilling lines and of rigging up. By merely pulling one pin, the entire block opens up to expose the sheaves, and the lines may be easily laid in place. The pins are replaced after the block has been closed, and it is ready for use.

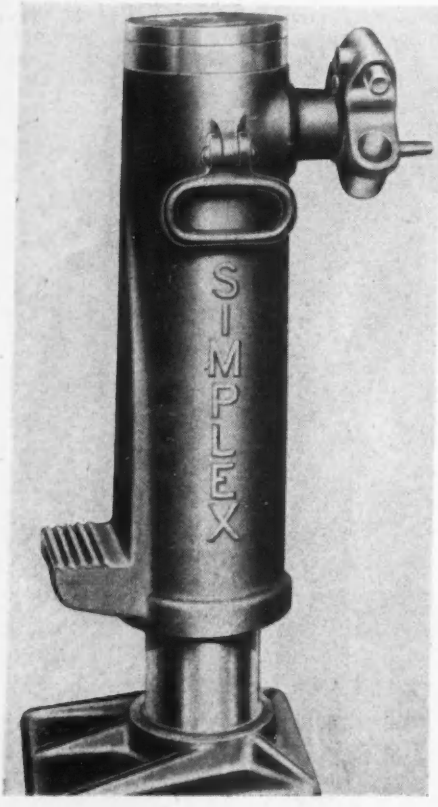
On rig-to-rig production work, the operator can leave the lines hanging in the derrick between jobs. The manufacturers claim there is a safety advantage because there is no need for risky crown operations to reeve the lines. By using the link adapter and a swivel bail adapter on the swivel, the operator can run pipe and support the drill string with the same elevator assembly. In addition to the two basic types of connectors, DBH unitized blocks are available with 1, 2, 3 or 4 sheaves in a wide range of sheave diameters and with load ratings from 30 to 150 tons. On all units, the free-swiveling hook or link adapter can be quickly locked in any one of eight equally-spaced positions.

Manufactured by Baash-Ross Tool Company, 5512 S. Boyle Ave., Los Angeles 11.

(Check item 4 on postcard for more information.)

5—Jack

A new, Simplex ball bearing bridge and industrial jack has been designed for lifting, lowering and supporting heavy loads. Weighing only 140 pounds, this jack has a capacity of 25 tons and



will lift to a maximum height of 10¼ inches. It is capable of lifting high or low work to full rated capacity on corrugated top cap which is 22 inches above ground level or on ten-inch square toe lift which is only 4⅜ inches above the ground.

Greater clearance above ground is claimed to permit easier operation due to the fully enclosed, dirt-proof ratchet and elevating mechanism which are at the top of the jack instead of at the base. Safe operation is assured by chrome-molybdenum steel thrust bearings, heat-treated seamless alloy steel elevating sleeve, alloy steel lifting screw, and forged alloy steel gears. Manufactured by Templeton, Kenly & Company, 1020 S. Central Ave., Chicago 44, Ill.

(Check item 5 on postcard for more information.)

6—Pipe Cleaning Machine

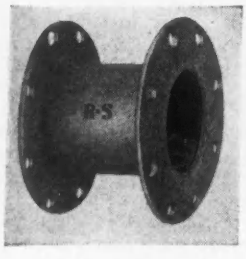
The Model 600 motor-driven pipe cleaning machine incorporates the magichuck and the improved electro-rod motor drive to form a one-man operated device for cleaning the inside surface of pipe and tubing. Operating advantages claimed include disengagement of cable without stopping the motor, feeding the cable its full length without stopping the motor, and building up a torque to drive the cable through difficult obstructions. The danger of kinking, backlash and cable breakage are eliminated and time is saved.

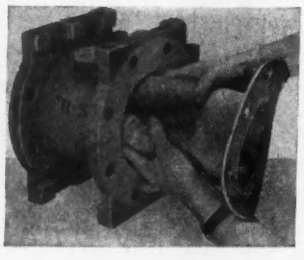
The power unit is located ahead of the cable storage, thus permitting location of the drive at the cleanout opening, and eliminating the danger of the operator having to handle several feet of rotating cable. The unit can be equipped with specially tooled flexible shafting to clean and polish condenser tubes, process lines, water boiler piping, and similar work. The large, heavy gauge spun steel drum accommodates 100 feet of ½-inch cable. The chuck on the power unit has an interchangeable key which transforms the unit into a wood drill for piercing walls when installing new lines. It is capable of cleaning lines from one to four inches in diameter, and three cable sizes are available. Manufactured by Spartan Tool Company, 6007-A North Lincoln Ave., Chicago 45, Ill.

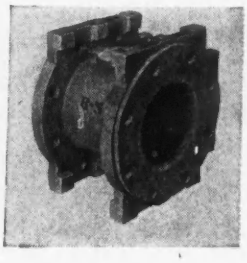
(Check item 6 on postcard for more information.)

7—Butterfly Valve

A new, low-pressure, streamlined butterfly valve which is said to give a positive shutoff has been announced. This positive shutoff is attained by a wedge-type action of the butterfly vane within a patented, replaceable, rubber seat. The illustrations show the rubber spool, the insertion of the rubber spool within







the valve body, and the assembled valve. The rubber spool is a carefully developed rubber which is flexible, tough, and functions efficiently within the temperature range of minus 20° to plus 200° F.

The spool fits somewhat loosely within the valve body and causes the rubber to bunch up around the entire periphery of the vane as well as at the shaft bosses, which are the critical points during closing of the vane. According to the manufacturers, the valve was tested by fully opening the vane and slamming it shut by means of a 50-pound weight for 9000 times. At the conclusion of the test, the valve is said to have maintained a perfect closure. The heavy flanges of the spool are bored to correspond with the bolt holes, and also act as gaskets. The R-S rubber seated butterfly valve is available in sizes to handle 15 to 125 pounds per square inch using 125-pound standard American flanges. Manufactured by R-S Products Corporation, Valve Division, Philadelphia 44, Pa.

(Check item 7 on postcard for more information.)

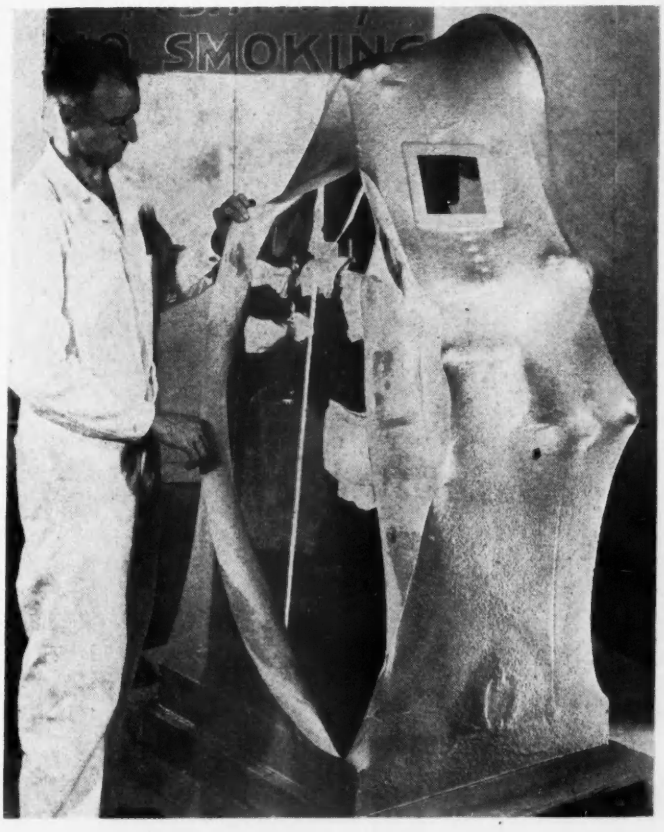
8—Gaskets

Forged gaskets for valves, valve bonnets and flanged connections are being manufactured for high pressure and high temperature pipe line use wherever ready disassembly is necessary. Forged of different metals to meet the requirements of different service conditions, these ring gaskets are said to permit a connection that is as tight as a weld, by using a wrench. The ring gaskets are first forged in closed impression dies, and then machined to assure exact dimensions for all service. They are available in two types: the oval, Type O, and the octagon, Type X. A wide range of sizes including all standard API sizes can be supplied. Manufactured by The Steel Improvement & Forge Company, Addison & Metta Aves., Cleveland, Ohio.

(Check item 8 on postcard for more information.)

9—Packaging Plastic

"Cocoon" is the trade name of a new packaging plastic developed to completely enclose machines, either in pieces or assembled, to exclude moisture, bacteria, mold and dust from the delicate, exposed parts during shipment from the factory or during storage. The plastic consists of modified film-forming vinyl resins, carried in volatile solvents which are generally sprayed on bridging strips. There are special types of work that require dipping rather than the spray process.



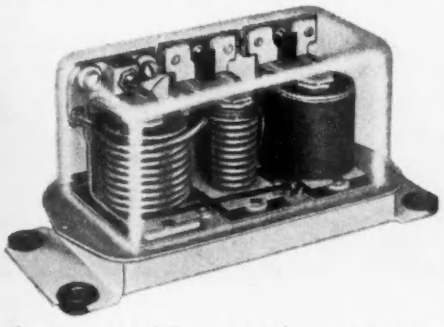
The spray packaging method is a simple and quick means of packaging parts, assemblies, or complete machines, regardless of size or complications in shape. It consists of an initial spray operation which bridges large openings and voids with long web-like plastic filaments that completely enclose the item being covered. Subsequent spray applications produce a durable tough, flexible moisture-proof package which withstands winds, rains, snow and sunlight over long periods. When dry, the finished plastic coating has a tensile strength of 1750 to 2000 pounds per square inch, and may be stretched to over three times its original length before breaking. It is said to remain flexible at sub-zero temperatures and does not became tacky at 180° F. It is resistant to acids, alkalic, aliphatic hydrocarbons, oils, fats, greases, alcohol and salt spray.

According to the manufacturer, the only equipment necessary is a standard spray gun plus a supply of air. For long periods of open storage, an aluminum coating may be sprayed over the plastic covering to provide additional protective layers. Manufactured by R. M. Hollingshead Corporation, Camden, New Jersey.

(Check item 9 on postcard for more information.)

10—Voltage Regulators

Compactly designed and sturdily constructed, these three-unit, vibrating-type, heavy-duty voltage regulators are said to be especially suitable for low voltage DC generator applications, such as stationary or mobile gas engines or motor-driven units. All three units (reverse current relay, voltage control, and current limiter) are designed to work in any position and withstand the external vibration and shock normally encountered in mobile apparatus.



The complete assembly is sealed in a gasketed, drawn steel enclosure which is dust-tight and waterproof. They are available in maximum capacities of 30 amperes at six to 32 volts DC and 45 amperes at six to 12 volts DC. Maximum field current ratings are three amperes at six volts and 0.5 amperes at 32 volts. Manufactured by R-B-M Division, Essex Wire Corporation, Logansport, Ind.

(Check item 10 on postcard for more information.)

Literature

11—Expansion Joints

A revised and enlarged catalog has been released by the MagniLastic Division of Cook Electric Company. The publication lists complete engineering data, dimensional tables, and specifications for MagniLastic's standard packless expansion joints, anchor joints and low pressure-large diameter expansion joints. It contains information on other recent developments by the company such as offset, turbo and jacket joints and includes material on high temperature exhaust bellows and heavy-duty clinch lock bellows. Catalog 278M is 24 pages long and contains numerous illustrations.

(Check item 11 on postcard for more information.)

12—Diesel Power

Several applications of diesel power to oil field and pipe line problems are pictured in a new booklet, Form 9547, "When It's Power You Need." The 16-page publication outlines the versatility of diesel power and contains many interesting, pertinent illustrations. Published by the Caterpillar Tractor Co., Peoria 8, Ill.

(Check item 12 on postcard for more information.)

13—Pipe Coatings

"Underground Pipe Wrap" is the title of a new eight-page booklet describing glass fiber pipe coatings for protection against corrosion. Printed in two colors, the booklet discusses the characteristics of Fiberglas, with numerous illustrations showing actual field installations and testing procedures. Packaging data and mileage tables are given along with a list of the branch offices. Released by Owens-Cornings Fiberglas Corporation, Toledo 1, Ohio.

(Check item 13 on postcard for more information.)

14—Vaporspheres

The method for determining the correct sizes of the vaporsphere, used for the temporary storage of petroleum vapors, is discussed in a 20-page publication, "The Vaporsphere," which also includes the method of designing the vapor lines which connect the flat-bottom tanks to the vaporsphere. It describes the method of reducing the evaporation losses from these tanks which store volatile liquids by installing a vapor-saving system with facilities for the temporary storage of volatile vapors. The vapor pressure, expansion of air-vapor mixture and the flow of vapor in the lines can be read directly from charts included in the booklet. Published by The Chicago Bridge & Iron Company, 332 S. Michigan Ave., Chicago.

(Check item 14 on postcard for more information.)

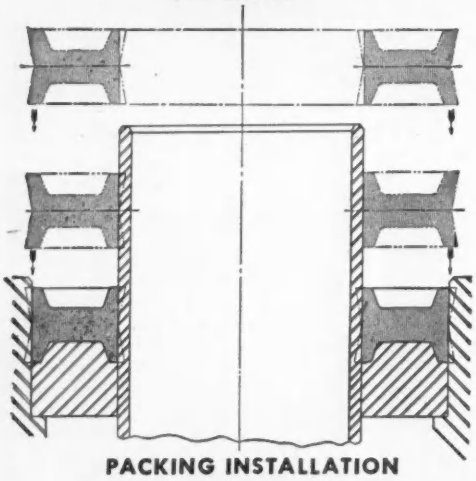
15—Wire Rope

Well illustrated and in three colors, a new booklet, "Preformed Wire Rope . . What It Is . . . What It Does," tells the story of the development of preformed wire rope and what that development has meant to all industry. In non-technical language, it tells what the preforming process does to the wires in rope and what effect it has on the rope's final service. A chart shows the average difference in service life between preformed and non-preformed wire rope on ten different machines.

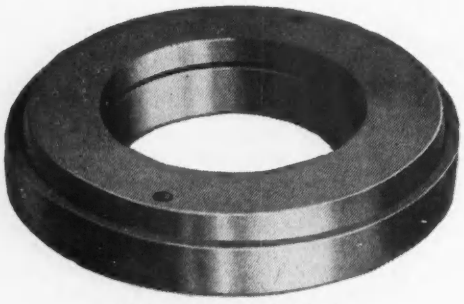
Published by the Preformed Wire Rope Information Bureau, 520 North Michigan Ave., Chicago.

(Check item 15 on postcard for more information.)

PACKING

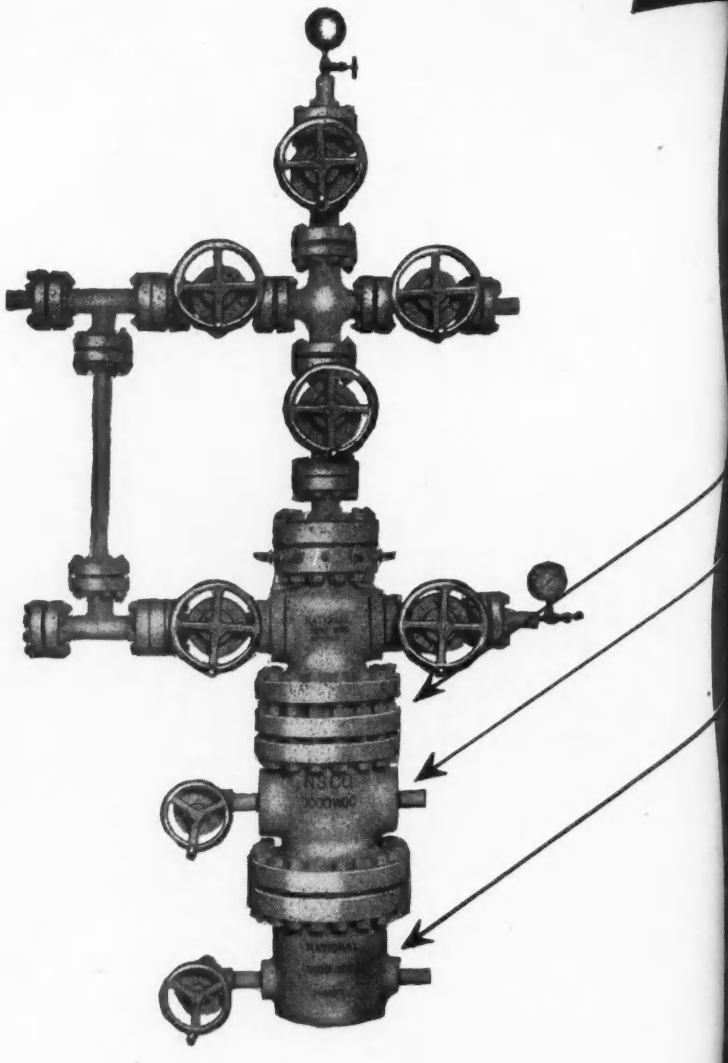


PACKING INSTALLATION



PACKING SUPPORT

PACKING SPACER



THE NATIONAL SUPPLY COMPANY

GENERAL SALES OFFICES: TOLEDO, OHIO • DIVISION OFFICES: DENVER • FT. WORTH • PITTSBURGH •

EXPORT: NATIONAL SUPPLY EXPORT CORPORATION, 30 ROCKEFELLER PLAZA, NEW YORK, N. Y., U. S. A.; RIVER PLATE HOUSE,

NATIONAL WELL-HEAD EQUIPMENT OFFERS THIS *Pressure Packed* FEATURE

THE INNER SEAL: Type "B" Pressure Pack packings are a new application of an old hydraulic principle which utilizes a pressure differential to produce the sealing action. The higher the pressure differential, the tighter the seal. Type "B" packing is designed to produce an initial tension in the lip around the casing and an initial compression in the lip inside the housing, thus insuring that a differential is set up with either gas or fluid pressure in terms of ounces.

Type "B" Packing is of double-lip construction which insures positive sealing regardless of whether a higher pressure exists in the lower annular space due to ineffective cementing and high pressure sands, or in the upper annular space.

The specially compounded, tough, oil-resistant plastic will not extrude or disastrously deform under well pressure loads. The absence of high initial loads prevents extrusion between the packing support and the casing, the former of which must have clearance to allow for variation of casing size and assembly.

Type "B" Packing is self-activating and since it does not require high preload stress to make it function, nullifies the danger of collapsing casing with loads imposed by the packing, a danger ever present when packing effectiveness relies on human adjustment or the tension requirements of the casing. This packing, being self-locating, transmits the load to packing support, or spacer rings which are contoured to conform to the packing shape. The support ring transmits the load to the housing.

The packings are easily installed: Grease the packing to make it slip readily, use any flat piece to stretch the inner lips around the casing, and compress the outer lips into the body, push the packing down, and the job is finished.

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First in Quality — THE NATIONAL SUPPLY COMPANY

NATIONAL BLUE PRODUCTS

Crude Market Still Strong; Season Affects Products

The industry's markets generally continue quite firm, with relatively few changes in prices. Supply and demand appear to be in fairly delicate balance as regards crude, with none of the raw material going to storage and ready demand existing for the available supplies. Principal refined products meanwhile are entering the important autumn transition period in which marked changes occur in current demand for gasoline and fuel oils, and present markets reflect these seasonal influences.

Currently there is some perceptible slowing of demand for gasoline, as less favorable motoring weather lies ahead. But the demand for fuel oils for heating purposes has not yet started on an important scale. Those oils consequently continue to accumulate in storage, while not yet in urgent immediate demand.

Of particular interest to producers is the continuing noteworthy firmness of the market for crude. In some districts the crude market probably would be more accurately described as tight, since some refiners are reporting difficulties in obtaining adequate supplies of crude. On the Gulf Coast, for example, several independent refiners are reported to be operating materially under capacity for lack of crude. Similar conditions have been reported in recent weeks also in other refining districts scattered over most of the country.

Along with these reports of some difficulties in securing crude, there have been unconfirmed rumors also of payments of premiums, above posted prices. The present situation is regarded as conducive to the payments of premiums, which in turn would tend to promote further increases in officially posted prices.

Lubricating oils currently are the strongest of the industry's principal products marketwise. Quotations on various grades of lubes have been increased in the past ten days by refiners in Western Pennsylvania and the Mid-Continent.

Although gasoline is the industry's principal product, its market behavior has not been impressive in recent weeks. Despite continued mild weather, demand has not been particularly strong, and while prices continue mostly unchanged, there have been some instances in which individual marketers have slightly lowered their quotations on certain grades.

Prices of fuel oils likewise remain generally unchanged and steady, but there have been some signs of increased interest in obtaining supplies, as colder weather approaches, and individual marketers have reported sales at prices above their earlier quotations.

Increase in Fuel Oil Output Balanced by Gasoline Drop

The industry carried on operations in the week of October 12 at almost the same rate as in the previous week, with a moderate drop in gasoline production being balanced by an increase in fuel oil output.

Market requirements of gasoline showed signs of leveling off during the week, allowing stocks to start a definite upward trend, while a hold-off in the burning oil's heavy demand season made possible a continuance of heavy accumulations. These trends were revealed by the latest weekly bulletin of the API.

U. S. crude production in the week of October 12 remained unchanged from the previous week's 4,737,000 barrels a day, but showed an increase of 956,000 barrels or 25.3 percent over the daily average of the comparable week of last year.

Crude runs to stills increased 2000 barrels from the previous week's rate to average 4,867,000 barrels a day. These daily runs topped those of last year's corresponding week by 1,251,000 barrels or 34.6 percent.

Refinable crude stocks totaled 221,782,000 barrels on October 5, a reduction of 1,261,000 barrels during the preceding seven days, according to the Bureau of Mines' latest report. These stocks were 2,791,000 barrels or 1.2 percent under the 224,573,000 barrels held October 6, of last year.

Gasoline production, including natural blended at the refineries, was cut back 347,000 barrels from the previous week's output to total 14,993,000 barrels, which exceeded that of last year's like week by 3,886,000 barrels or 35 percent. Stocks of finished and unfinished gasoline started their seasonal upswing by rising 1,176,000 barrels during the week and stood at 86,585,000 barrels at the week's end. This gasoline on hand represented an increase of 17,539,000 barrels or 25.4 percent over that held one year ago.

Distillate fuel oil output amounted to 6,166,000 barrels for the week of October 12, an increase of 479,000 over the previous week, and 2,262,000 barrels or 57.9 percent over the comparable period of last year. Stocks of this light fuel increased 1,198,000 barrels during the week to reach the all-time high of 63,412,000 barrels, which were 19,893,000 barrels or 45.7 percent more than were on hand a year ago.

Residual fuel oil production increased 260,000 barrels over the previous week to total 8,454,000, which was an increase of 1,167,000 barrels or 16 percent over the like period of 1945.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	54,983	11-15	102,448	1 -4
1942	4,337	2- 7	3,961	1- 3	283,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,162	10-28	64,744	10- 7
1945	4,944	7-21	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1- 6
1946	[1]4,961	6-15	4,911	8-31	229,430	3- 2	105,233	2-16	[1]63,412	10-12	59,753	10-12
Lows:												
1939	[2]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-18
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	3,621	10- 6	3,409	10- 6	[4]211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26
1946	4,403	3- 9	4,498	1-12	218,193	1- 5	85,324	9-28	25,131	3- 9	37,289	4- 6

TRENDS OF 1946

Trends In Week Ended	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week End
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,337	28,240	8,738	37,746
April 27	4,672	4,685	224,443	14,228	99,631	5,568	30,466	9,204	39,404
May 25	4,759	4,857	222,214	14,322	95,769	5,463	32,973	8,908	43,368
June 29	4,957	4,854	223,883	14,500	92,333	5,325	37,762	8,828	46,447
July 27	4,926	4,896	223,756	14,535	88,626	5,817	44,316	8,217	49,517
August 31	4,833	4,911	227,132	15,014	87,217	5,630	53,134	8,539	53,173
September 28	4,778	4,829	223,043	14,675	85,324	5,832	59,827	8,172	57,657
October 5	4,737	4,865	221,782	15,340	85,409	5,687	62,214	8,194	58,611
October 12, 1946	4,737	4,867	.....	14,993	86,585	6,166	[1]63,412	8,454	59,753
October 13, 1945	3,781	3,616	[5]224,573	11,107	69,046	3,904	43,519	7,287	46,073
Change:									
In week	.....	+2	—1,261	—347	—1,176	+479	+1,198	+260	+1,142
In year	+956	+1,251	—2,791	+3,886	+17,539	+2,262	+19,893	+1,167	+13,680
In year	+25.3%	+34.6%	—1.2%	+35.0%	+25.4%	+57.9%	+45.7%	+16.0%	+29.7%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, October 6, 1945.

☆ Oklahoma

Cotton County Keys-Walters Field Has North Extension

Keys-Walters field extended ½ mile north; Texola spuds deep wildcat near Warwick; Coon Creek's 26th producer completed; Pontotoc County wildcat appears to be pool opener; Skelly to test new gas zone at Cleveland County well.

Cotton County: More than a score of wildcats started here during the week, and several wells loom as producers. Latest success is Erle P. Halliburton, Inc.'s Tilley 1, SW SW NE 23-1s-10w, which extended the Keys-Walters field of the northern sector of the county ½ mile north. The well, ½ mile northeast of the gas well discovery of the field recovered 420 feet of oil on a drill-stem test of the Zipsie sand, from 2328-45 feet, and is now pumping an estimated 75 barrels of oil a day.

Lincoln County: Texola Drilling Company has set surface pipe and is drilling below 1200 feet at Seaba 1, NE NE SE 17-14n-3e, near Warwick. Contract depth is 5200 feet or the Wilcox. Location is on a block of 1480 acres, of which 320 acres are state school lands, with some leases on the Warwick townsite.

Coon Creek Area: The 26th producer for the productive Coon Creek pool, on the Oklahoma-Logan County line, has been completed by Sinclair Prairie Oil Company and associates. The well is Crabb 2, NW SW NW 3-14n-1w, which made 35 barrels of oil per hour through ½-inch choke from the second Wilcox at 5955 feet. This well is the third producer in 8 days in the pool for Sinclair Prairie.

Pontotoc County: Oil & Gas Industries, Inc., apparently has opened a new pool at Jenkins 1, wildcat in NE NE SE of 20-4n-4e. The test is east of Stratford. On a recont drill-stem test of a Pennsylvanian sand at 1419-32 feet, 70 feet of oil-cut mud and a show of free oil were recovered. This was the second oil-stained sand encountered, the first being at 1291 feet. Location is on a small concentration, with contract for 3000 feet or the Arbuckle lime zone.

Cleveland County: Skelly Oil Company has been granted permission to dually complete from the Viola lime and the Wilcox sand zones at Divis 2, SE SW NW 30-10n-3w, west flank of the West Moore field. This would be the first production for this pool from the Viola. A. E. Jenkins, production engineer for the company, said that the well, regarded as a salvage operation, would make 200,000 cubic feet of gas a day from the Viola lime, while the Wilcox sand is good for approximately 25 to 35 barrels of oil per day. In the proposed operation, the gas would be injected to the Wilcox to flow the Wilcox oil by heads.

Gasoline Tax Proceeds Up

The added 2-cent gasoline tax imposed by the Oklahoma legislature at its last term produced $6,985,663 in revenue between April, 1945, and July 1, 1946, the Oklahoma Tax Commission records revealed. The Commission said that collections have increased since the end of the fiscal year and indicated that additional collections of $5 million are expected by the end of 1946.

☆ Kansas

Harper County Wildcat Logs Gas Show in Kansas City

Harper County wildcat logs show of gas; Rooks County wildcat completed for 2700 barrels; Rush County test opens new oil pool; potential being taken at pool opener in Ellis County.

Harper County: Amerada Petroleum Corporation's Peacock 1, wildcat in NW SW NE 32-23s-8w, logged a good show of gas at 4212 feet in the Kansas City lime, and is drilling on before testing that formation. The wildcat is 16 miles west of Anthony, and many miles from oil or gas production. Mississippi lime was cut at 4566 feet.

Rooks County: H. H. & B. Drilling Company's new pool opener, Hilgers 1, NE NE NE 13-9s-19w, has been completed for a potential of 2735 barrels of oil per day. Pay is from the Arbuckle lime, from 3479-84 feet. The wildcat is a mile southeast of the Barry pool, and on a test made 40 barrels of oil per hour.

Rush County: Magnolia Petroleum Company has opened a new oil pool with Christianson 1, SE SE SW 28-19s-16w, 2 miles from the Ryan pool, to the east. The well established a potential of 122 barrels of oil daily from the Lansing lime, through perforations at 3740-49 feet. The prolific Ryan pool produces from the Arbuckle. The Arbuckle encountered at the Christianson, however, was dry.

Ellis County: Potential is being taken at the discovery well in the Pleasant North pool. The wildcat and pool opener, J. C. Farley's Weisner 1, SE SE SE 26-13s-20w, in a preliminary test pumped 75 barrels of oil 5 hours from the Arbuckle lime, 3798-3815 feet. The well is a mile northeast of the Pleasant pool, which has 18 producing wells, with

Wells Completed in United States in Week Ended October 19, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second or third issue of each month. More detailed data on wildcats published in third or fourth issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative: This Year	Last Year
Alabama	....	....	....	....	....	....	....	....	....	....	....	....	13	29
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Arkansas	....	....	....	1	1	....	1	....	2	3	4	2	147	153
California	22	1	....	3	26	....	....	....	9	9	35	36	1,469	1,750
Colorado	1	....	....	....	1	....	....	....	....	....	1	3	120	35
Florida	....	....	....	....	....	....	....	....	....	....	....	1	21	12
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	2	6
Illinois	29	....	....	15	44	....	3	....	5	8	52	50	1,750	1,522
Indiana	6	....	....	3	9	1	....	....	....	....	10	10	383	274
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Kansas	21	5	1	11	38	2	....	....	2	2	42	36	1,636	1,359
Kentucky	8	1	....	5	14	....	....	....	....	....	14	12	508	503
Louisiana	12	5	....	4	21	....	1	....	5	6	27	31	1,053	838
North Louisiana	5	5	....	....	10	....	1	....	3	4	14	17	595	329
South Louisiana	7	....	....	4	11	....	....	....	2	2	13	14	458	509
Michigan	2	2	....	5	9	....	....	....	7	7	16	13	626	618
Mississippi	4	....	....	....	4	....	....	....	....	....	4	3	179	308
Missouri	....	....	....	....	....	....	....	....	....	....	....	....	22	43
Montana	4	....	....	4	8	....	....	....	2	2	10	5	215	188
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	3	3
New Mexico	3	....	....	....	3	....	....	....	1	1	4	23	352	347
New York	15	....	10	....	25	....	....	....	....	....	25	25	962	913
North Carolina	....	....	....	....	....	....	....	....	....	....	....	....	1	1
Ohio	8	13	....	5	26	....	....	....	....	....	26	27	986	796
Oklahoma	42	1	....	16	59	2	1	3	10	14	75	64	2,328	1,879
Oregon	....	....	....	....	....	....	....	....	....	....	....	....	2	....
Pennsylvania	28	6	15	....	49	....	....	....	....	....	49	51	2,508	2,380
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	2	3
Texas	91	13	2	32	138	4	3	1	24	28	170	156	6,481	5,874
E. Tex. Bor. Co.'s	2	7	....	1	10	....	....	....	2	2	12	2	143	88
Rest of E. Texas	4	2	....	1	7	....	....	....	1	1	8	5	424	187
North Texas	21	....	2	16	39	1	....	....	3	3	43	42	1,822	1,420
W. Central Tex.	3	....	....	3	6	2	2	....	2	4	12	16	520	383
West Texas	31	....	....	3	34	1	1	....	4	5	40	35	1,399	1,415
Tex. Panhandle	4	2	....	....	6	....	....	....	....	....	6	10	297	495
G. Coast, Upper	2	....	....	6	8	....	....	....	4	4	12	13	528	568
G. Coast, Lower	18	2	....	....	20	....	....	....	5	5	25	25	885	842
Southwest Texas	5	....	....	2	7	....	....	1	1	2	9	4	330	399
S. Central Texas	1	....	....	....	1	....	....	....	2	2	3	4	133	77
Utah	....	....	....	....	....	....	....	....	....	....	....	....	3	....
Virginia	....	....	....	....	....	....	....	....	....	....	....	....	2	....
Washington	....	....	....	....	....	....	....	....	....	....	....	....	1	1
West Virginia	....	12	....	....	12	....	....	....	....	....	12	22	597	646
Wyoming	3	....	....	2	5	....	....	....	....	....	5	2	127	139
Total U.S.	299	59	28	106	492	9	9	4	67	80	581	572	22,501	20,621

* Includes distillate wells. † Includes salt water disposal wells.

bulk of production from Reagan sand. Operators have had trouble in increasing the well's production, and for a period of almost 2 months it swabbed from 1 to 5 barrels of oil per hour on short tests.

☆ Illinois Basin

Moultrie County, Illinois, May Get First Production

Discovery looms in Moultrie County, Illinois; Mattoon pool getting extension; new pools for Wayne County, Ill., and Posey County, Ind.

Illinois

Ben Taylor's Hardinger 1, SW SW NE 21-12n-63, Moultrie County, 7 miles west of Mattoon field production, is slated for production test of Aux Vases sand which if successful will give the county its first oil production. Sixty-five feet of oil-cut mud was recovered in a drill-stem test of pay at 1933-44 feet. The operator set casing at 1931 and is waiting on cement. Total depth of hole is 2011 feet.

Coles County: J. A. Kull's Harris Corbin 1, SE SE SW 34-13n-7e, more than ¼ mile north of Mattoon pool production, recovered a good show of oil in the Rosiclare at 1919-27 feet and apparently will extend the pool. Operator is drilling below 1980 feet to inspect other zones before testing the Rosiclare.

Wayne County: The Texas Company's Hines 1, SEc 1-1s-9e, is opening a new pool with O'Hara lime production from pay encountered at 3254-62 feet. During a drill-stem test the well made gas in 7 minutes and began flowing in 43 without a trace of water.

White County: C. E. Brehm's Callicott 1, SE SE NW 10-6s-10e, has been completed as the discovery of the North Concord pool. Well was completed on pump for 248 barrels in 24 hours from Aux Vases sand at 2950-60 feet.

Indiana

F. A. Calvert's Wiley 1, SW SW NE 18-5s-13w, Posey County, is opening a new pool with McClosky lime production. The well swabbed 258 barrels of oil in 18 hours, then swabbed and flowed 37 barrels in 1½ hours through 2½-inch tubing from pay at 2974-84 and 2994-3003 feet. In the most recent test, well swabbed 83 barrels in 7 hours through tubing as testing continued.

☆ New Mexico

Ellenburger Production Gets Extension in Brunson Field

Ellenburger production extended ¼ mile north in Brunson field with high well; shallow production passed up in the Hobbs field being tapped by 2 plugged-back wells.

Lea County: Amerada Petroleum Corporation's Corrigan 5, C SW NE 4-22s-37e, extended the Brunson field ¼ mile north in topping the Ellenburger at 7532 feet, or 79 feet high to nearest deep producer, and logged first pay after drilling 5 feet of the section. The main porous oil zone was entered at 7562 feet and the base had not been reached in drilling below 7586 feet. It will be drilled through the pay then completed through perforations, giving the area its 13th Ellenburger producer.

Amerada's Hare 1-A, C SE SW 33-21s-37e, Eunice townsite area, was running tubing packer to exclude upper gas after testing 103 barrels of oil and 33 barrels of acid load daily, with gas-oil ratio of 12,125/1, through ½-inch choke. This production was from 3 zones of Yeso perforations between 6510 and 6575 feet.

Hobbs Field: Sun Oil Company's McKinley 1-B, deepened regular pay pumper, failed to produce when given swabbing test with tubing on packer, and was drilling at 6355 feet in Clear Fork, topped at 6010 feet. The production test was made at 6208 feet.

Standard Oil Company of Texas' State 1-29, NW SE SE 29-18s-38e, depleted regular pay producer at 4191 feet, has been plugged back to try for production from Bowers sand perforations at 3190-3210 feet. Initial swabbing tests failed to make a producer, but more pay is available immediately below and above. Tide Water Associated Oil Company's Grimes 2, situated on adjoining lease was swabbing 1½ barrels of oil hourly after acidizing Bowers perforations at 3148-58 feet and 3184-94 feet, having plugged back after depleting the regular pay. A large percentage of the Hobbs field's wells flowed oil and high-pressure gas from the 3200-foot Bowers on drill-stem test, or from blowouts, but this zone was passed up by all, excepting a north end well, which has been pumping from the Bowers since December, 1935.

Deep Prospect: Skelly Oil Company's Steeler 2, C NE NE 17-23s-37e, deepening from 7200 feet, logged base of the Permian at 7586 feet, with elevation of 3333 feet, and was drilling dry dolomite at 8010 feet.

San Juan County: Byrd & Frost, Inc. and P. B. English's Federal-Fee 1, C NW NW 4-27n-10w, Kutz Canyon prospect, was drilling shale at 4765 feet. This wildcat passed up nominal oil and gas show at 4403-47 feet.

AIMME Holds Symposium

A symposium on mapping producing profiles in oil and gas wells was held at the October meeting of the Mid-Continent Division, AIMME. Papers presented were "Water Entry Points in Oil Wells," by Dr. Dan Silverman of Stanolind Oil & Gas Company; "Gas Flow Meter Surveys in Gas Wells," Henry Schaefer and Robert Leibrock of Stanolind, and "Application of Spinner Surveys," by L. B. Swan of Dowell Incorporated.

Indian Lands Offered

Sealed bids for oil and gas mining leases on restricted lands of members of the Five Civilized Tribes, will be received at the office of Superintendent W. O. Roberts at Muskogee, Okla., until 10 a.m., November 12.

Kansas Hearing Set

Kansas State Corporation Commission has set October 25 as the date for considering market demand and to fix the state and pool allowables for November. Hearing is scheduled for 10 a.m. in Wichita.

☆ West Texas

Water Tested in Ellenburger By North Goldsmith Prospect

Ellenburger production eliminated on North end of North Goldsmith field. Polar field assured of second producer; Ellenburger prospect in Union field correlates unusually high on pre-Permian beds; followup development reveals that a substantial number of the deep oil strikes made within the past year will not be large in area.

Ector County: Humble Oil & Refining Company's Cowden 1-C, C SE SW T&P Ry. 3, Block 45, T-2-N, a mile north by east of the Devonian oil discovery for the North Goldsmith field, was idle after testing 8250 feet of sulphur water at 9185 feet in Ellenburger, topped at 9155 feet with elevation 3296 feet. This outpost missed the Devonian, but registered a light show of oil and gas at 7940-8084 feet in the Silurian, topped at 7910 feet. The Ellenburger marker correlates 600 feet low to Humble's Cowden 1-B, recent Ellenburger discovery 1½ miles east, while top of Silurian is only 16 feet low to Phillips Petroleum Company's Cowden-Bum 1, North Goldsmith field Siurian discovery that flowed 226 barrels of 36.2-gravity oil and 64 barrels of water, with gas-oil ratio 1332/1, on ½-inch completion gauge from perforations at 8255-80 feet.

Murchison Pool: American Republics Company's TXL 1, which passed up probable production in the Devonian at 8377-8407 feet, was drilling lime and chert at 9510 feet. No shows were listed for the Silurian, topped at 9114 feet. Phillips et al's Millard Unit 1, southwest outpost and a failure in the Devonian, was drilling at 8790 feet.

Wheeler Field: Lion Oil Company is starting TXL 1, C NW NW T&P 17, a mile east of production, since the 160-acre lease requires completion by May 18, 1947. Samedan Oil Corporation's TXL-Texaco 1, ½ mile east of production and also in Ector County, was drilling at 8240 feet, or within 300 feet of its Devonian objective. This 160-acre lease, which requires production by November 26, was farmed out by The Texas Company, with 1/16 override retained.

Yoakum County: Amerada Petroleum Corporation's Tannehill 1, ¾ mile northwest of Devonian production in the Jones Ranch field, was due to set pipe to regain circulation lost near bottom at 11,438 feet. This outpost is below the water level established by other producers, but a small show of oil and gas appeared when circulating on bottom.

Andrews County: Phillips' University 1-O, C NW SE Sect. 17, Block 12, 1¼ miles west by south of Clear Fork production in the Block 12 field, tested 45 feet of gas-cut mud at 8246-8306 feet in lime, possibly Devonian, and was drilling chert at 8325 feet. This outpost logged base of the Leonard at 8070 feet and top of the Woodford at 8098 feet, with elevation of 3307 feet. The Atlantic Refining Company's University-Texu 1-E, also a failure in the Clear Fork, was drilling dry lime at 8460 feet.

Stanolind Oil & Gas Company's University 1-LL, C SE NE Sect. 18, Block 11, ¾ mile southwest of the Three-Bar field discovery, tested water from De-

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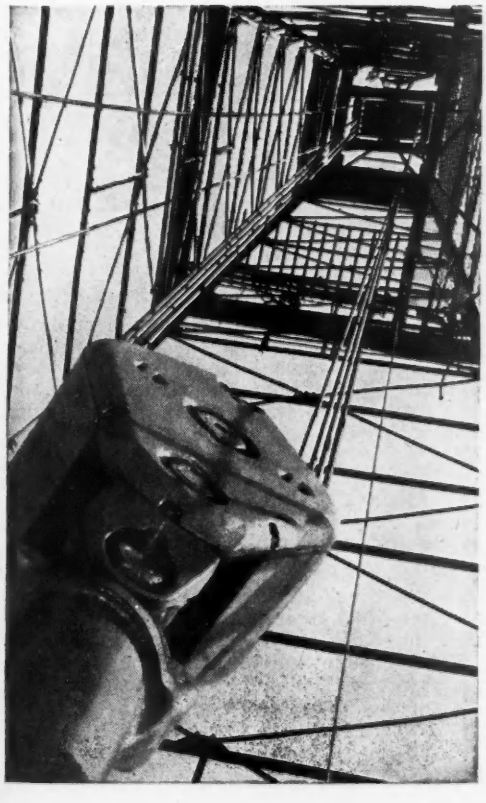

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vonian perforations at 8390-8420 feet, and was perforating higher with dim chances of making a producer.

Shell Oil Company and The Texas Company's Ratliff-Bedford 3, ½ mile north by west of the Bedford field multi-pay discovery, was drilling lime at 10,420 feet, having entered the Montoya at 10,120 feet, or 201 feet low. However, it passed up commercial production in the Devonian and Silurian. The partnership's Ratliff-Bedford 4, short southwest outpost, was drilling at 10,890 feet, and is reported to be checking low.

Kent County: Humble's Elkins 1, ¾ mile northeast of its Polar pool discovery, failed to flow when tested through perforations at 7795-7825 feet in Ellenburger, topped at 7787 feet, or 20 feet low, and will be acidized.

Ward County: Phillips' University 1-B, 1½ miles southeast of Pyote, was drilling at 9730 feet. This wildcat passed up production in the Wolfcamp at 9325-9436 feet.

Pecos County: Helmerich & Payne, Inc.'s White-Baker 9-C, ⅝ mile west by north of its 7600-foot Strawn pay discovery in the White & Baker field, was drilling at 8580 feet to explore the Ellenburger. This confirmation well showed comparatively little oil and gas when tester was used in Strawn at 7598-7740 feet. Dry Devonian was topped at 7940 feet.

Deep Prospects: Stanolind Oil & Gas Company's University 1-GG, Crockett County, failed to flow after nitro shot in Ellenburger at 8336-72 feet, and was moving in cleanout rig. It was plugged back from water at 8384 feet. In Reeves County, Argo Oil Corporation's Roberts 1 was making production test with 5-inch casing at 9895 feet after plugging back from 14,073 to 12,140 feet.

Natural Gasoline Output Records Drop for July

Production of natural gasoline and allied products dropped in July to 12,747,000 gallons daily from 13,091,000 gallons in June, due primarily to decreased output in the Texas Panhandle, the Bureau of Mines disclosed.

Output of light products from natural gasoline and cycle plants for the month included 204,516,000 gallons of natural gasoline against 206,162,000 gallons in June; 31,705,000 gallons of natural gasoline mixture against 30,924,000 gallons; 27,176,000 gallons of raw condensate against 26,184,000 gallons; 27,409,000 gallons of commercial butane-propane mixture against 26,841,000 gallons; 25,677,000 gallons of normal butane against 28,835,000 gallons; 26,642,000 gallons of propane against 23,266,00 gallons; 6,905,000 gallons of other mixtures against 8,082,000 gallons; 14,291,00 gallons of iso-butane against 13,615,000 gallons; 2,552,000 gallons of iso-pentane against 2,519,000 gallons; 23,277,000 gallons of finished gasoline and naphtha against 21,847,000 gallons, and 5,007,000 gallons of other products against 4,440,000 gallons.

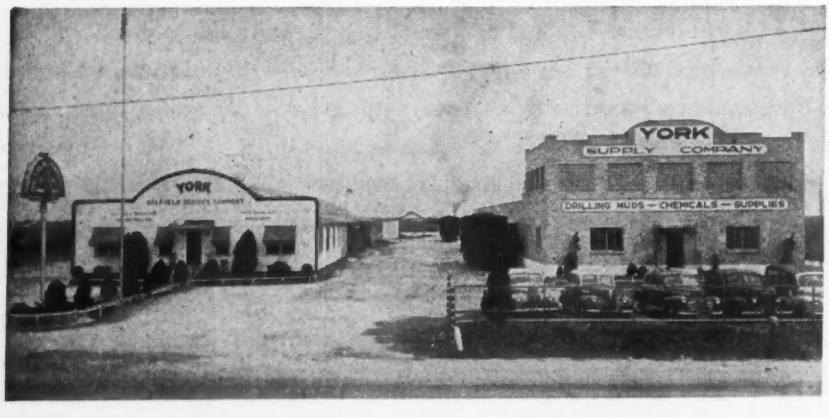
Total stocks declined slightly, for the first time in several months, an increase in stocks at plants and terminals from 211,911,000 to 213,599,000 gallons being offset by a decline of refinery inventories from 96,474,000 to 94,416,000 gallons, the bureau stated.

Louisiana Bids Asked

The State Mineral Board of Louisiana has announced that sealed bids for the leasing of mineral rights on 11 tracts of state-owned land, totaling 11,566 acres, will be received until November 2, 1946, at its office in Baton Rouge.

Utah Leases Offered

Bids are being accepted on oil and gas leases on approximately 3367 acres of unsurveyed Navajo Tribal lands on the Navajo Indian reservation, lying in a solid block, just south of the San Juan River near Mexican Hat, Utah. Bids will be received at the office of the general superintendent, Window Rock, Ariz., until 2 p.m., October 31.



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☆ North Texas

Northeastern Clay County Wildcat Has Strawn Shows

Northeastern Clay County wildcat showing for Strawn producer. Throckmorton County prospect passes up favorable showing to explore the Mississippian before running pipe.

Clay County: Jack Grace et al's Edwards 1-B, S. C. Beldon Survey and 2⅓ miles northwest of the Hapgood pool, swabbed 5 barrels of oil hourly on preliminary test after 80-quart nitro shot in Strawn sand at 5495-5503 feet, with the well bottomed in shale at 5506 feet. This strike involves accumulation on the west flank of the old Worsham, or Ringgold high.

Throckmorton County: Konrad Sztygold et al's Richardson 1, Sect. 3083 TE&L Company Survey and 5 miles northwest of the Ewalt 2-pay field, recovered 300 feet of oil and 300 feet of oil-cut mud when tester was used in Bend at 4645-61 feet. This showing indicates commercial production for the zone, but this test was drilling at 4915 feet to explore the Mississippian before setting pipe.

Fred M. Manning, Inc.'s McKnight 2-D, Sect. 4, Day Land & Cattle Company Survey and 2150-foot southwest outpost for the McKnight field, was preparing to complete after logging Bend pay at 4032-74 feet. A drill-stem test of this zone yielded gas to the surface within 3 minutes, and a steady flow of oil in 19 minutes. Rig has been skidded to an offset location. The firm has been unusually successful in developing flush production near abandoned producers in the Masters, or North Woodson field. Five rigs are engaged in this development, and the 2-inch pipe line serving the area is to be replaced with a 4-inch in order to accommodate the anticipated growth in production.

Standard Buys Properties

Standard Oil Company of Ohio has purchased the properties and assets of Sharon Drilling Company. Sharon's assets on June 30 totaled $448,165. The company is engaged principally in developing and operating oil and gas leases in Kansas. Standard issued 7500 shares of 3¾ percent cumulative preferred stock, series A, $100 par, and 9300 shares of common stock, $10 par, as payment for the Sharon properties.

Engineers Elect

The Petroleum Engineering Club of the University of Oklahoma elected officers October 3 as follows: President, Jack C. Owens, Miami, Okla.; vice president, Ray Loper, Cleveland, Okla.; secretary, Don D. Eley, Kingfisher, Okla.; treasurer, Maurice Lewis, Jr., Sayre, Okla., and Saint Patrick's council representative, Pete Cawthon, Tuscaloosa, Ala. W. F. Cloud is faculty sponsor.

Spacing Order Approved

P. J. Hoffmaster, state supervisor of wells, has approved an order permitting ten-acre locations in certain areas of the Rockford pool, Kent County. The old order limited drilling in the 2200-foot pay field to 20-acre locations. Part of the area affected falls in the Rockford village townsite where the village council is still holding out on a 20-acre ordinance.

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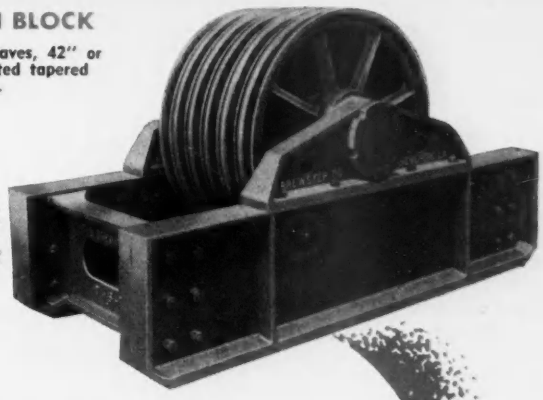

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☆ East Texas

Rodessa Yields Distillate On Hawkins Structure Edge

Rodessa yields distillate on northeast edge of Hawkins structure; burning gasser in Tri-Cities field making in excess of 15 million cubic feet of wet gas; completion gauge given Rodessa discovery on Richland-Currie fault.

Wood County: Humble Oil & Refining Company's McKnight 1, W. R. James Survey and on the northeast edge of the Hawkins field, was coring at 9200 feet to try for deeper production after recovering 180 feet of 52-gravity distillate when tester was used in the Rodessa at 8942-70 feet. This showing will result in pipe being set for completion try regardless of the results obtained by deepening.

Navarro County: Temple Hargrove et al's Wallace 1, John Jones Survey and near Woodbine production on the Richland-Currie fault, flowed 39¼ barrels of 23-gravity oil plus 8 percent water on official gauge through 1-inch choke from Rodessa perforations at 5447-54 feet, having plugged back from barren Travis Peak at 6185 feet.

Wildcats: John Ivy and W. T. Moran's Murray 3, John Durst Survey and 4 miles southwest of Creek, tested salt water in sub-Clarksville sand at 7885-7916 feet, and was drilling hard sand at 7985 feet. In Leon County, J. B. Daniel Oil Company's Cox 1, 3 miles southeast of Flynn and an Edwards lime test, was drilling shale at 7375 feet.

Kaufman County: Barron S. Barnes et al's Coleman 1, J. J. Trevino Survey and 5 miles north of Mabank, was awaiting orders at 4512 feet in Georgetown, topped at 4360 feet and on the downthrow side of the fault. The Woodbine, entered at 3674 feet, carried water.

Coke Field: Amerada et al's Coke Unit 2, 2200 feet northwest of the field's prolific gas-distillate discovery in the Young at 8080-8130 feet, found this prospective producing zone faulted out due to cutting fault at 8125 feet. A drill-stem test at 8243-87 feet yielded 180 feet of rotary mud and no new fluid. A hard and dry sand, tentatively identified as Travis Peak, was entered at 8344 feet and the first 5 feet was without shows. A core was to be taken at this level. This test is prepared to continue to the Smackover, if the 4 participating companies elect, as 10¾-inch casing was cemented at 5130 feet to be prepared for a pre-Trinity test.

Smith County: Humble's Moseley 1, northwest offset to its Mount Sylvan field discovery, increased its flow to 135 barrels daily through ¼-inch choke after reperforating opposite Paluxy saturation at 7360-75 feet, or 5 feet lower than original perforations. The company has scheduled 5 additional tests north, northwest and southwest of its 2 producers. Humble's Pool 2, 1740 feet southwest of the discovery, was drilling at 3450 feet, having entered the Pecan chalk at 3107 feet, while its Clark 1, northwest outpost, logged this marker at 3068 feet, and was drilling at 3110 feet.

Delta Drilling Company et al are starting W. H. Boynton 1 in the northwest corner of the J. J. Smith Survey to explore a separate Paluxy prospect about a mile east by north of the Mount Sylvan field, which has registered structural dip to the east and southeast through failures to the Glen Rose.

Henderson County: M. B. Chastain and Crow Drilling Company's Young 1, offsetting gas-distillate production in the Tri-Cities field, blew out while preparing to make production test of perforations in the Bacon (Upper Rodessa) perforations at 7580-7610 feet, and caught fire. The blaze fatally burned a driller and injured another member of the crew.

Stekoll Offices Moved

The Dallas, Texas, and Independence, Kansas, offices of Stekoll Petroleum Company have been consolidated, with the main office now located at 815 S. Boulder Avenue, Tulsa. Marion Stekoll, manager, and George Hixon, engineer, formerly were at Independence. George McCulley, office manager, and Dick Kizer were formerly in the Dallas office.

Recreational Group Formed

The Mid-Continent Petroleum Corporation of Tulsa's "D-X Club," recently organized as a recreational agency for office and technical personnel, held its first meeting October 11. Officers include: Dwight R. Blazier, personnel section, president; Ted Bodly, vice president; Reese Darnell, treasurer; and Mary Jane Baile, secretary. Governors of the group include Sam Craig, Betty Jane Jones, H. C. Hamilton, Ken Yeager, Billie Benson and Sam Baird, scouting department; Britt Havenstrite, traffic department, and Jack Savage.

Sinclair Office Closed

Sinclair Wyoming Oil Company is closing its Michigan district land and geological office at Mt. Pleasant, opened four years ago. E. R. Kemp, geologist in charge since last spring, will be transferred to the company's Evansville, Indiana, office.

☆ East Texas Border

Waskom Area Given Pettit Gas-Distillate Extension

Waskom area extended by Pettit gas-distillate producer; small oiler completed on south flank of Carthage field.

Harrison County: Edgar C. Johnston's Allen Page 1, Simpson Holloway Survey, on the west flank of the Waskom structure, 1 mile southwest of Johnston's Cargill 1, which opened the new flush oil area a little south of Jonesville townsite, was completed for a Pettit wet-gas producer, with gauge not yet announced.

Marion County: H. W. Snowden's Watts 2, Tucker Survey, finaled a confirmation oiler for his Paluxy sand strike, in Marion Shallow area, which made 169 barrels daily on ¼-inch choke from 2440-50 feet.

Panola County: Paul Herwits No. 1 Unit 3, H. West Survey, south end of the Carthage field, came in as an oil producer, being completed at 5224-34 feet, and making 24 barrels of oil daily with only slight show of water.

☆ Southwest Texas

Southeast Extension Well in Sun Field Given Potential

Sun field extension given potential; Duval wildcat abandoned; Aviator outpost is dry hole; Zapata County wildcat waiting on heavy rig to deepen hole.

Starr County: Humble Oil & Refining Company's Pena et al 1, extension test on the southeast flank of Sun field, flowed on potential 109 barrels of 46.1-gravity oil daily through 9/64-inch choke. Tubing pressure was 450 pounds and gas-oil ratio 470/1. Total depth is 5258 feet with 5½-inch casing set to 4690 feet and perforated for completion at 4632-42 feet. The well is in CCSD-&RGNG Survey 241. Humble has started operations at Pena 2, 933 feet northwest of Pena 1.

Duval County: Newman Bothers Drilling Company & R. S. Hays' Lula Pursch 1, wildcat 15 miles northeast of Freer and a mile northeast of Seven Sisters field, has been abandoned at 3300 feet. A drill-stem test in the top of the Pettus sand recovered salt water.

Webb County: Dulaney Oil Company's A. M. Bruni est. et al 2, south outpost at Aviator field, has been abandoned as a dry hole at total depth of 1670 feet.

Zapata County: Gulf States Oil Corporation has moved light rig off the Kramer et al 1 and is waiting on a heavy rig to deepen the hole to 6000 feet. Present total depth is 3009 feet. It is in Porcion 23, 2 miles north of Lopeno field.

☆ South Central Texas

Atascosa County's Jourdanton Field Has Another Producer

New producer completed at Jourdanton; small producer at Gas Ridge completed; wildcat north of Crystal City abandoned.

Atascosa County: Another oil well for the Jourdanton field is Plymouth Oil Company's E. L. Powell 1, 934 feet south of Humble Oil & Refining Company's Alamo Lumber Company 1, first flowing oil well in the field. On potential the well flowed 63.4 barrels of 38.9-gravity oil daily through ⅛-inch choke with gas-oil ratio 1262/1 and tubing pressure 400 pounds. Completion is from open hole at 7386-88 feet, total depth. Top of pay is 7371 feet and production is from the Edwards lime, topped at 7275 feet.

Bexar County: Southwest Drilling Company's Mathilda H. Covell et al 57, Lucas Munoz Survey 86 at Gas Ridge field, has been completed as a small producer. On pump the well gauged 2.03 barrels of oil daily, with no gas or water. Production is from slotted liner at 419-72 feet, total depth. This well is located 311 feet east of the Covell 44, nearest producer.

Zavalla County: The Texas Company's Cross S. Ranch 1, wildcat 8 miles north of Crystal City, has been plugged as a dry hole with total depth of 4302 feet. A drill-stem test at 3382-87 feet recovered 20 feet of oil-cut mud and 250 feet of salt water in 30 minutes. Bottom hole pressure flowing was 200 pounds and shut-in pressure was 1400 pounds. This dry hole is in Sect. 53, Pedro Jose de Aguirre Grant A-2.

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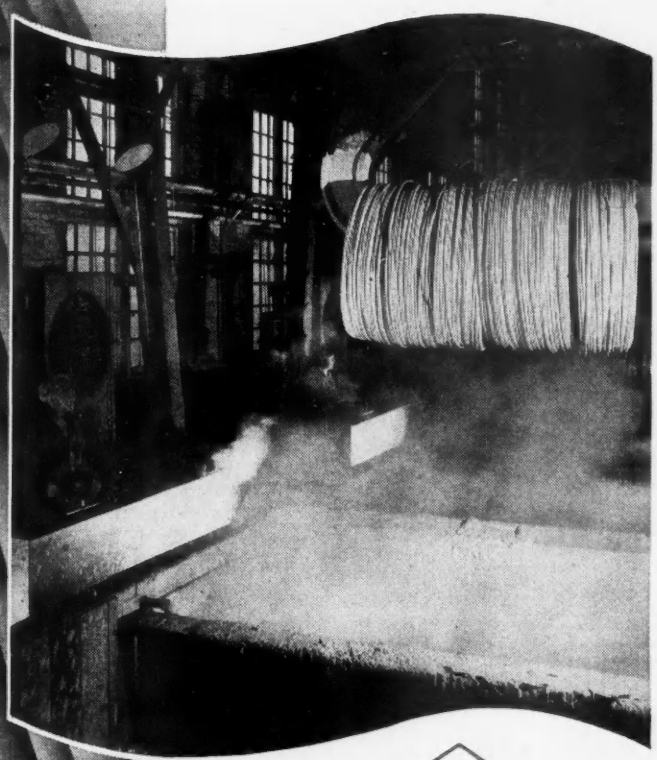

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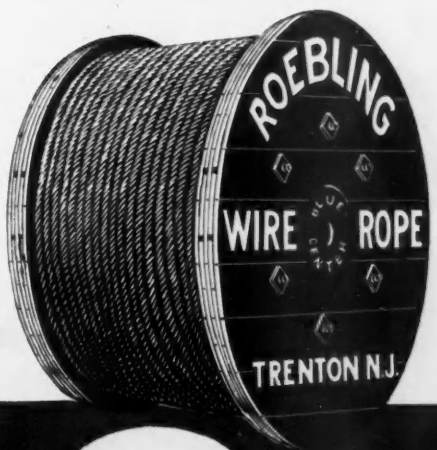

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☆ Lower Texas Coast

Wildcat Near Foley Field Has Flow of Oil on Initial Test

Holzmark wildcat flows small amount of oil on initial test; production tests being made in Burnell-Wilcox extension; Kleberg County discovery gauges flow; casing set for tests in Nueces County wildcat; 2 wildcats north of Refugio in same general vicinity testing for completion as discoveries.

Bee County: Sam Donzis' Holzmark 1, wildcat about a mile south-southwest of Foley field production, flowed 2 barrels of oil per hour on initial test of perforations at 3486-3524 feet and 3455-65 feet. Tubing pressure was 200 pounds and it is believed the well may have to be put on the pump for final completion. Total depth is 3502 feet with 5½-inch casing set on bottom.

Fred Shield and Allen & Morris' W. H. Brinkoeter 1-A, outpost in the southwest extension sector of the Burnell-Wilcox field, has 5½-inch casing set to 6918 feet and is running production tests. Total depth is 7136 feet. This test is 2400 feet southwest of Stewart & Brown's Brinkoeter 1, which recently extended Luling sand oil production to the southwest in this field.

Kleberg County: Sun Oil Company's Canales 4, discovery 2⅔ miles southeast of Tijerina-Canales field, on latest test, flowed 91 barrels of condensate and 23 barrels of water daily on ¼-inch choke, with gas volume estimated at 3 million cubic feet daily. Total depth is 11,554 feet with production from perforations at 10,830-840 feet. This well is in the southwest corner of CCSD&RGNG Survey 339.

Nueces County: Jack Little, Trustee's Emma Rieber 1, wildcat a mile north of the Richard King field, has 5½-inch casing set to undisclosed depth and is making production tests. A drill-stem test at 5149-56 feet developed 475 pounds working pressure in 7 minutes and flowed dry gas with bottom hole pressure 2340 pounds. This test is in the southwest corner of a 400-acre tract in the Casa Blanca Grant.

Refugio County: Wil-Tex Oil Corporation & Herman Brown's Jamie Hynes 1, wildcat 3 miles northwest of Refugio and a mile northwest of the old Refugio field, is running production tests with unannounced results. Total depth is 7453 feet. A gas-condensate sand in the well was encountered at 6490-6510 feet.

Hecar Oil Company's Jamie Hynes 1, wildcat 3 miles north of Refugio in the same general vicinity as the Wil-Tex & Brown wildcat, flowed an estimated 80 percent oil and 20 percent water on latest test of perforations at 6412-19 feet. Total depth is 6465 feet and possible pay sand was logged at 6380-6450 feet.

API Program Set

"Offshore Drilling" is the subject of a talk to be presented by I. W. Alcorn, chief engineer, The Pure Oil Company, Houston, before the Houston Chapter, API, at the Texas State Hotel, October 22, at 6:30 p.m. Included in the program is a movie, "Drilling at McFadden Beach," which shows Humble's early operation on the coast between Galveston and Port Arthur, Texas.

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☆ Upper Texas Coast

Madisonville Area Discovery Completed in Edwards Lime

New discovery in Madisonville area completed in Edwards lime; wildcat staked in north Port Neches discovery area; good well completed at El Campo; West Fairbanks area wildcat fails to flow on production test.

Madison County: West Production Company and Noranda Oil Company's H. M. Boring 1, Madisonville area, has been completed in the Edwards lime as a new field discovery. On potential the well flowed 39 barrels of 55.8-gravity condensate daily through ¼-inch choke along with 1,053,000 cubic feet of gas. Flowing pressure on tubing was 935 pounds and 1105 pounds on casing. Casing is perforated at 9495-9570 and 9615-30 feet and plugged back total depth is 9635 feet. Total depth of the hole is 12,536 feet and 5-inch liner is set to 12,316 feet, 7⅝-inch casing being set to 9545 feet. This is one of the first tests on the upper Texas Coast to find production in the Edwards lime, limited to wells drilled along the northern boundary of the Upper Gulf Coast region. Glendale field, in Trinity County, discovered Edwards lime production early this year, and was shut in after producing a small amount of condensate.

Orange County: Gulf Oil Corporation has located C. K. Akers 1 as the second test in the area recently opened by Hinkle Drilling Company's Adcock 1, north of production in the Port Neches field. The test is 726 feet southwest of the Hinkle discovery on a 300.62-acre lease in the John Stephenson Survey, Abstract 169. Projected total depth is 9000 feet and ground elevation at location is 15 feet.

Wharton County: Seaboard Oil Company of Delaware's Reba S. Snell 3-A has been completed as a good high-gravity oil well on the north edge of production at El Campo. On potential the well flowed 202.62 barrels of 44.2-gravity oil daily through ⅛-inch choke with 2250 pounds pressure on tubing and 1150 pounds pressure on casing. Total depth is 6965 feet and production is from perforations at 6660-64 feet.

Harris County: Sun Oil Company's Independence Gardens Unit 1-A, wildcat in the West Fairbanks area and south of production in Fairbanks field, tested perforations at 7061-66 feet and did not get a flow. The hole was swabbed to 6800 feet with no shows. A previous test of perforations at 7566-76 also failed to flow and when swabbed recovered 100 percent salt water. Total depth is 8240 feet and 5½-inch casing is set to 7646 feet.

☆ South Louisiana

Confirmation Test in Singer Discovery Area Proves Dry

Confirmation test in Singer discovery area dry; another producer completed at Mamou; Bay Marchand wildcat abandoned at 11,233 feet in salt.

Beauregard Parish: Magnolia Petroleum Company's Newport Industries 1, confirmation test in the Singer discovery area, SW SE 22-5s-11w, has been found dry after drilling to 8150 feet. The hole

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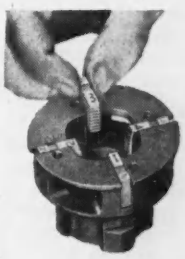

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will be used as a salt water injection well. This test is ¼ mile southwest of Magnolia's Lutcher-Moore 2-C, discovery for the Singer area. The discovery was completed January 25 for a potential of 130 barrels of 46.1-gravity oil daily, production being from the Cockfield at 7638-42 feet. One other well has been completed in the field. It is Magnolia's Dolby 1, ½ mile due east of the discovery, completed July 2 for a potential of 129 barrels of oil daily at 7644-46 feet.

Evangeline Parish: Another completion for Mamou field is Magnolia's Guillary-Landreneau Unit 1, ¾ mile west-southwest of the discovery. On potential it gauged 216 barrels of 47.6-gravity oil daily through 8/64-inch choke with gas-oil ratio of 1685/1 and tubing pressure 1250 pounds. Total depth is 11,839 feet with 7-inch casing set on bottom and perforated for completion at 11,771-780 feet. This is the seventh producer completed in Mamou field.

Lafourche Parish: Union Oil Company of California's City of New Orleans 2, wildcat on the west side of the Bay Marchand dome, has been abandoned at 11,233 feet. The test topped salt at 8648 feet and was still in salt at total depth. Geophones were run in the hole before abandoning, apparently in an attempt to locate the limits of the salt overhang, penetrated by the No. 1 wildcat abandoned in June and located 2100 feet north-northwest.

Union Gets Leases

Union Oil Company has been granted leases to oil rights on 35,000 acres of harbor land near Montesano, Wash. The company has agreed to start drilling in three years. Leases provide for an annual rental of 25 cents per acre and for 12.5 percent royalty in event oil is struck. Previous oil leases were granted for 10 cents an acre.

☆ North Louisiana

Franklin Wildcat Drilling in Paluxy After Shows Logged

Franklin wildcat drills in Paluxy; Jackson Parish deep test waiting on orders; Delhi field wildcat testing.

Franklin Parish: Atlas Oil & Refining Company's wildcat, Ayer Timber Company 1, SW NW 26-14n-9e, has logged showings in the Tuscaloosa and cored from 6588-92. Recovery was sand with odor and faint stain. Drilling continues below 6731 feet, thought to be in the Paluxy.

Jackson Parish: Shell Oil Company's Tremont Lumber Company 3, 21-15-1w, after going to 12,000 feet, is awaiting orders without findings being indicated. This is the second deepest test in North Louisiana.

Madison Parish: Additional development of the Delhi field in Madison Parish is indicated by C. H. Murphy-Sun Oil Company's O'Neal Wilburn 1, 17-17-10e, in which 5½-inch producing string has been set at 3369 feet.

Caddo Parish: N. A. Hendrickson's Muslow 1, in 5-20-15w, Pine Island field, is reported to have had some shows in the Pettit, but no information has come from the operators, who reportedly plan a check of the Cotton Valley. Drilling continues below 5500 feet.

☆ Arkansas

Nevada County Wildcat Logs Oil Show in Blossom Sand

Nevada County wildcat reports good show of oil in Blossom sand; Lewisville producer completed on pump.

Nevada County: T. W. Lee's P. C. Grayson 1, wildcat in NE NE 35-14-20, has set casing at 2100 feet with a good show of oil in the Blossom sand reported. This test would extend production about ½ mile west in the Troy field.

Columbia County: McAlester Fuel Oil Company's Alexander A-1, wildcat in NE SE 17-17-19, 1 mile west of Village field production, is testing in the Cotton Valley. A Travis Peak test around 4830 feet resulted in salt water and an effort is being made to squeeze it off. Total depth is 7389 feet.

Atlas Oil & Refining Company's R. A. Wynn 1, SW SW 8-16s-19w, 2 miles south of shallow Stephens field, is at 6109 feet and trying to free stuck drill pipe. The wildcat is structurally high and has reported Pettit porosity at 3487-94 and 3504-11 feet.

Lafayette County: McAlester Fuel Company completed its wildcat discovery Adams Estate 1-A, C SW NW 16-16s-24w, near the city limits of Lewisville. The well is pumping 164.83 barrels of 36.6-gravity oil and 36.18 barrels of salt water daily from perforations at 3977-92 feet in the Hill zone. Total depth is 4350 feet.

☆ Mississippi

Superior's Forrest County Test Now Below 15,000 Feet

Forrest County deep test continues on below 15,000 feet; Sharkey platform tests in full swing.

Forrest County: The Superior Oil Company's Cassie Bradford 1, SEc SW NW 1-3n-13w, is below 15,000 feet, far below any depth previously attained in this state. Several weeks ago string of 7⅝-inch casing was set to 12,000 feet, but whether this was production or protective string was not established as no information is being given out. Unofficial reports are that good shows of oil were encountered at 11,600 feet, but these are being discounted by the fact that the hole has continued down well below the 15,000-foot mark with no attempt being made, apparently, to develop any findings. This test is being made in the vicinity of Hattiesburg in the southeastern section of the state. Previous tests of the general area have all failed, but they were not drilled to any depths comparable to that of the Bradford. A second test is also readying up in the same county. H. H. Duck & Willis Highes' C. O. Herchenhahn 1, NW SW 13-5n-12w, is waiting on rig with work scheduled to start shortly.

Adams County: The Ohio Oil Company's Geo. W. Armstrong 1, SEc 12-5n-3w, wildcat, is drilling below 10,540 feet in potential producing zone with no shows recorded. Cores from 10,479-488 feet recovered shaly sand and black shale. In the LaGrange field, one of the year's two discoveries, Roeser & Pendleton-Sohio Petroleum Company's Baker-Beach 1, offset of the discovery well, 34-6n-2w, shows promise of making a fair producer. Instead of working down to the Massive sand where the Baker-Maier 1 was originally brought in and later failed, the Baker-Beach was bottomed in the Wilcox zone where good production has been established. With packer at 6200 feet, a drill-stem test yielded 165 barrels of 38-gravity oil on 9-hour test with ¼-inch tubing chokes. The field's third test, Roeser & Pendleton-Sohio's Parker Baker 1, 8-6n-2w, is drilling below 6100 feet. Commercial production should be established within the next 200 feet.

Lamar County: Welch-Gulf Refining Company's John Q. Butler 1, SWc SE 32-2n-16w, which, if successfully completed will extend the Baxterville field more than 1 miles northeast, has cored several sections of saturation below 8900 feet. Previously, the well encountered gas sand with commercial potentialities at 7863-65 feet. Findings so far indicate the well is almost certain to make a commercial producer. The Texas Company's Mrs. Geo. W. Bilbo 1, NEc SW SE 7-1n-16w, has been successfully completed for a good producer in Baxterville with an initial production of 346 barrels of 14.5 gravity oil per day through 7/32-inch tubing choke. Production was established from perforations opposite the Massives and zone at 8744-48 feet.

Lincoln County: Sun Oil Company's Leon Case 1, NEc 17-7n-7e, Brookhaven field, has been successfully completed after encountering trouble with salt water. Casing was perforated at 10,306-315 feet, and after acidization, the well was swabbed in and pumped 68 barrels of oil per day in initial test.

Florida

Gulf Refining Company's State 1, Lse. 373, SWc 2-67s-29e, Monroe County, is the only well in the state drilling in potential productive zone. It is below 12,394 feet in lime with no shows reported during the past week.

Collier County: Humble's Lee Cypress Company 1, SW SE 28-47s-29e, is working below 4617 feet. Four other tests in the state are readying up or are working at shallow depths.

☆ Michigan

Allegan County Test to Be Acidized After Oil Showings

Spidel and Linsley's McCarn 1, NW NW NE 7-1n-13w, Allegan County, 2 miles north of old Trowbridge pool, showed 600 feet of oil natural in Traverse lime pay at 1334-37 feet and will be acidized.

Wexford County: Gulf Refining Company set 5-inch casing at 4018 feet on Jacobs 1, NE NE SE 11-21n-9w, preparatory to a production test in the Dundee dolomite, topped at 3894 feet. Cores showed some saturation at 3919 feet.

Van Buren County: Harry Stroud is abandoning Biermann 1, NW SW SW 3-2s-14w, after production tests on a Traverse lime pay at 1220-60 feet.

Spacing Rule Amended

Producers in the Rockford pool, Kent County, Michigan, have been granted permission to drill on ten-acre units, excepting in an area of about 300 acres east of the Rogue River which com-

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prises the main business and residential section of the Rockford village. Spacing in this area must continue to conform to the old pattern of 20-acre units. Six to ten new locations are expected to be drilled in the 2200 foot Traverse pay pool as a result of the new order.

☆ Ohio

Hemlock Grove Is Extended Southwest by Flowing Well

Flowing well extends Hemlock Grove; west extension completed for North La Grange; Big Prairie has gasser; Somerset well makes gas; North Wayne gets gas extension.

Meigs County: Wallace Brothers' Waid Bing 1, SE NW 1, Bedford Township, had a good thickness of Berea sand at 1575-95 feet, which after a 60 quart shot flowed 50 barrels in 20 hours. The completion extends the pool ⅓ mile southwest and caused additional offset locations to be staked.

Lorain County: Glen Harmon's W. D. Johnson 1, Lot 36, La Grange Township, a 1 mile west extension to the North La Grange pool, came in at 1½ million cubic feet of gas. Clinton sand, 2392-97 feet, was tubed natural.

Holmes County: Along the north edge of the Big Prairie pool in Ripley Township, Ohio Fuel Gas Company's John Thompson 1, NE NW 6, gauged 2¼ million cubic feet natural. Upper Clinton, 3085-3106 feet, was dry with the pay in the lower at 3125-35 feet.

Perry County: South of the town of Somerset, J. R. Underwood's J. W. Ream 1, NW SW 10, Reading Township, found 700,000 cubic feet of gas in the Clinton, 3033-58 feet, with a low rock pressure of 450 pounds.

Muskingum County: Wasson Company's Harry Osborne 1, NW SE 3, Wayne Township, ⅓ mile west of its Wilson 1, drilled through the Clinton, 3899-3919 feet, with a gauge of 1½ million cubic feet of gas natural.

☆ Rocky Mountain Area

Big Horn County, Wyoming, Prospect Has Water on Test

Big Horn County, Wyoming, prospect tests water in Tensleep; new producing horizon established in Steamboat Butte field; Continental's Elk Springs, Colorado, discovery sets off leasing play; eastern limits established in Montana's North Cut Bank field.

Wyoming

Kerr-McGee and Phillips companies wildcat test of the Dry Dome structure at Government 1, NW NW NE 2-50n-92w, Big Horn County, does not look too encouraging after testing water in the Tensleep, but the well will be drilled on down to Madison for a test of that formation. A drill-stem test was made between 3665-3703 feet and 345 feet of fresh water was recovered in an hour. A week ago this well had saturation in the Phosphoria section between 3430-60 feet but this zone also made water. The Tensleep sand was topped at 3663 feet.

Fremont County: British American Oil Producing Company has established another producing horizon in the Wind River Basin of Central Wyoming at its Steamboat Butte field. The company's Well Tribal 6-E, NW NE NW 5-3n-1w (WRM), scheduled as a Madison (Mississippian) test, topped Amsden (lower Pennsylvanian) at 7233 feet and on drill-stem test between 7325-51 gauged 4,014,000 cubic feet of gas per day. On another test between 7352-70 feet the well made 280 feet of fluid of which 50 feet was oil- and gas-cut mud, 30 feet was muddy water, and 150 feet drilling fluid. Madison was topped at 7368 feet and the well is drilling in that formation.

The Amsden formation has produced in the Big Horn Basin of North Central Wyoming, but this is the first indication of its being a producing horizon in the Wind River area. Steamboat Butte was a discovery in 1943 in the Sundance and Tensleep horizons and there are now a total of 12 wells in those 2 formations. To date more than 3½ million barrels of oil have been produced from this field. This is British American's first test below the Tensleep sand in this field.

Sinclair Wyoming Oil Company is now completing its third and best well in the Tensleep formation at Sand Draw, 20 miles south of Riverton. The well is in SEc 10-32n-95w, and on 23-hour test October 5 flowed 2107 barrels of 33.4-gravity oil through tubing. Tensleep was topped at 7116 feet and 416 feet of saturated sand was drilled. This well is ½ mile north of Sinclair's Tensleep discovery, drilled in 1943, which was completed for 1800 barrels of oil per day. For the past month this well has been testing zones in the Phosphoria formation, immediately above the Tensleep sand, and gauged 500 barrels of 47-gravity distillate with 18 million cubic feet of gas from that zone. However, casing perforations in the Phosphoria were squeezed off and the well completed in the Tensleep. This field has produced gas from upper sands for a number of years, and has been producing some 1500 barrels of oil per day from the 2 Tensleep wells, which crude is moved via Sinclair pipe line to its refinery near Rawlins.

Colorado

Continental Oil Company's Weber sand discovery last week at Elk Springs, Moffatt County, 40 miles northeast of Rangely, has started a large leasing play in that area. More than 75,000 acres of federal lands have been applied for in the general Elk Springs area within a week. The well is Margaret Smith 1, NW SE SW 30-5n-98w, and on drill-stem test made 210 feet of clean 29-gravity oil with some oil- and gas-cut mud. Seven-inch casing was cemented at 6090 feet and the well is now drilling and coring below 6125 feet. Weber in this area is probably around 900 feet thick, and the entire section, at least to the water level, will be drilled and cored before the well is completed.

Montana

Union Oil Company of California has established the eastern limits of the North Cut Bank field in its Superior 1, c SW NE 7-36n-5w, Glacier County, which was abandoned after failing to find the saturated Madison zone productive in wells to the west. At 3250 feet, total depth, the well made sulphur water. This test was ½ mile east of The Carter Oil Company's Merchants Trust 2, completed a month ago for 174 barrels of oil per day.

☆ California

Tompkins Hill Field Gasser Completed, Another Planned

Texas brings in Humboldt County gas well; 2 wells abandoned in East Los Angeles area; another Monterey County wildcat staked; Paso Robles test will be abandoned; liner run to test showings in Kings County deep test.

Humboldt County: The Texas Company has completed Holmes-Eureka 3 in its Tompkins Hill gas field, about 10 miles south of the town of Eureka. On test the well flowed 5 million cubic feet through ½-inch choke. Texas discovered the field in 1937 and this completion is its third. To the southeast in 8-2n-1e, near Hydesville, operator is preparing to drill Anderson 1, a wildcat.

Yolo County: Texas has staked Stephani 1, wildcat in 28-9n-1w, about 5 miles west of the Fairfield Knolls gas field.

Los Angeles County: Richfield Oil Corporation abandoned 2 wells in the East Los Angeles area. Union Pacific Unit 2 in 8-2s-12w, semi-wildcat, produced only salt water with a trace of oil on formation tests and operations have been discontinued with bottom at 8861 feet. The discovery well of the field was brought in last winter by Richfield on its Union Pacific lease so the failure of the No. 2 well occasioned some disappointment.

Richfield's second abandonment in the county was Flood Control 1 in 14-2s-12w, near the town of Montebello. Well was drilled to 9255 feet. No tests were made. Operator's Boyle Community 33-1 in 31-1s-12w is drilling below 4490 feet.

Seaboard Oil Company is running tester in Mission Land 81, south of Newhall in 25-3n-16w. Total depth is 7525 feet. On the outskirts of the town of Newhall in 2-3n-16w, Shell is expected to abandon Braille Institute 1 discovery as non-commercial.

Monterey County: Texas abandoned Currel 1 in the Oasis area, 4-21s-8e, at 3280 feet and its Aurignac 1 in 4-23s-10e, near San Ardo, is on the idle list, but the operator is staking a new test, Cooper 1 in 19-21s-9e, about 5 miles southeast of the Currel 1 duster and 3 miles due south of the town of San Lucas.

San Luis Obispo County: Operations on Paso Robles Mutual Oil Development Association's No. 1 wildcat in 3-26s-12e have been suspended and formal abandonment is expected to follow. Well was drilled by a group of Paso Robles business men.

San Mateo County: E. T. Willard's wildcat in the Half Moon Bay district, located in 15-6s-5w, has been drilled to 2200 feet. Interest in the well is due to its location in an area where oil seeps have been observed for years and where some light oil production has been obtained.

Kern County: Oceanic Oil Company is preparing to complete Osborne 1, a schist test in the Edison field, 15-30s-29e. Clean 27-gravity oil was recovered on a test at 3585-3671 feet.

Kings County: Kings County Oil Company has run a blank liner to bottom at 12,627 feet in von Glahn 1 in 4-23s-22e and will gun perforate opposite showings indicated on electric log.

☆ Canada

Princess-Brooks Syndicate Has Gasser; Plans New Test

Princess-Brooks Syndicate, composed of Standard Oil Company of California and a number of independents, has a gas discovery at its initial venture, and is following up with a flank test in hope of tapping an oil accumulation. The discovery is Princess-Brooks Syndicate 1, lsd 13 17-19-13w4, with an open flow potential of 23 million cubic feet of gas daily, plus some light oil, from the Sunburst sand of the Lower Cretaceous, 3278-98 feet. On drill-stem test, well had yielded gas at a 1,800,000 cubic-foot rate against 1600 pounds flowing pressure, plus a show of oil.

The discovery is being followed up 1¼ miles east and ¼ mile north, in lsd 3 21-19-13w4, in hope of tapping an oil accumulation in the Sunburst. Wells were staked on the basis of seismograph work by Standard. The discovery is on the south Alberta Plains, 125 miles east and south of the city of Calgary, and is 7 miles northeast of the town of Brooks. It will be used to supply gas to Brooks, now linked up with a number of small, shallow, low-pressure gas wells adjacent to the town and no longer capable of meeting the town's peak loads.

Boosting total holdings of the McColl-Frontenac-Union Oil Company of California team in the Pinhorn area to over 800,000 acres, the Alberta government has granted Union a crown reservation covering 119,281 acres. The new holding rounds out a block extending 50 miles north of the Montana boundary, and up to 35 miles in width, centering on the McColl-Union July gas discovery.

Extending the oil and gas search northeast of Lloydminster in Central Western Saskatchewan, Northern Utilities Ltd. has been granted a 1-year geophysical permit covering 233,738 acres of crown oil and gas rights in Twps. 49 to 53, Rges. 24 to 28w3, flanking the Alberta border.

Husky Refining Company's O. & G. D. 4, Lone Rock (Saskatchewan) discovery in lsd 4 14-47-27w3, staged a spectacular performance when plug was drilled after casing through a gas sand to top of a Lower Cretaceous oil sand. Cement failure left gas sand open, and when plug was drilled, pressure hurled out a 1000-foot column of mud and water from the hole, and the well blew wild with gas flow estimated at between 20 and 30 million cubic feet plus an oil flow estimated variously at between 100 and 200 barrels daily.

The well was killed and recemented. It is bottomed at 1833 feet with 7-inch casing at 1825 feet. It had drill-stem tested a gas sand at 1813-19 feet (with flow rate 4 million cubic feet against 500 pounds flow pressure) and an oil sand 1824 to bottom (which gave a 300-foot gassified oil rise in 15 minutes).

Water-Flooding Planned

The Pure Oil Company is planning a water-flood program in the Cumberland pool of Marshall and Bryan counties, Southern Oklahoma. Work would be done gradually and probably started in a comparatively small part of the productive pool. The application for the water-flooding program was filed with the Oklahoma Corporation Commission. Hearing has been set for October 15.

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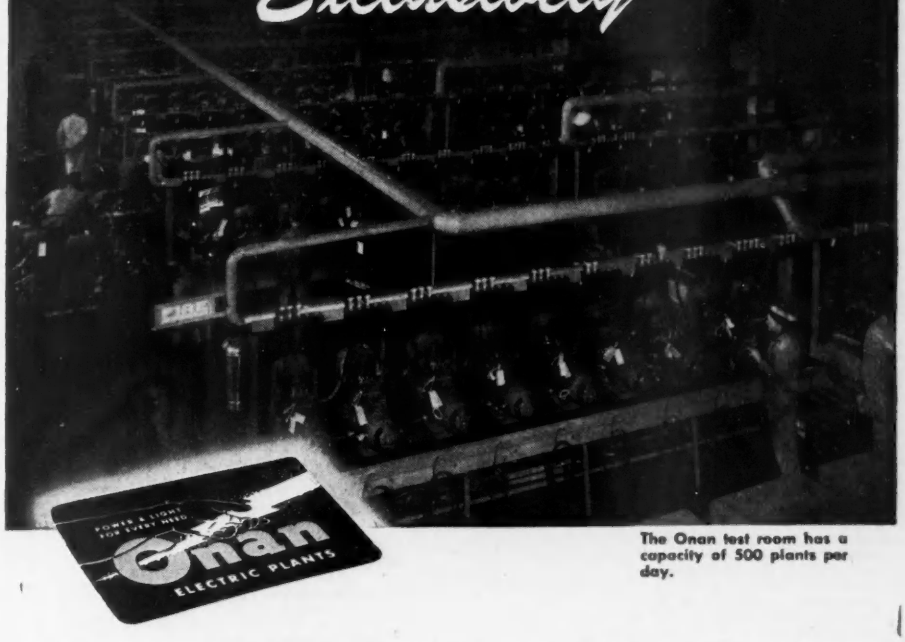

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ARKANSAS WILDCATS

Lafayette County — Failure: Ray & Woolf Drlg. Co.'s W. Kitchens 1, c nw se 17-15s-22w, Massive Anhy 2624-2744, Pettit 3220, Travis Peak 3476, abnd 10-5-46 at 3703.

Lafayette County—Oil Discovery: McAlester Fuel Co.'s Adams Est. 1-A, sw nw 16-16s-24w, 3½ mi fr Spirit Lake prod. Nacatoch 1950, Annona 2600, Buckrange 2850, Tokio 3070, Massive Anhy 3703-3800, perf 60 shots 3977-92, pump 201 bbls fluid, 72% 36.6-gr oil, 18% salt wtr, comp 10-8-46, td 4350, pb 4023.

Little River County — Failure: Rbt. W. O'Meara's Ed Wood Heirs 1, 3318 fr nl 3934 fr el 7-14s-28w, Paluxy, 2020, Glen Rose 2870, Anhy 3110-3200, Travis Peak 3810, Cotton Valley 4530, Smackover 5260, abnd 5664.

Little River County—Failure: Rbt. W. O'Meara's Ed Wood Heirs 1, 3318 fr nl 3934 fr el 7-14s-28w, Paluxy 2020, Glen Rose 2870, Anhy 3110-3200, Travis Peak 3810, Cotton Valley 4530, Smackover 5260, abnd 5664.

CALIFORNIA WILDCATS

Kern County—Failures: Gannon, Gannon & Aslin's 69-J-4, 36-2s-20e, Temblor Ranch area, abnd 10-7-46 at 1000.

M. R. & M. Syndicate's Tarabino 3, 5-29s-29e, S. Mountain area, abnd 10-6-46 at 2980.

Richfield Oil Corp.'s Bear State Corehole 1, 30-28s-21e, S. Belridge area, aband 10-3-46 at 895.

Richfield Oil Corp.'s Berry Corehole 2, 30-28s-21e, S. Belridge area, aband 10-4-46 at 940.

Standard's 79-29, 29-29s-29e, Kern Bluff area, Olcese 3005, Jewett 4538, Basement 5520, abnd 10-9-46 at 5545.

San Joaquin County—Failure: Amerada's Borden 1, 33-1n-4e, Victoria Island area, abnd 10-9-46 at 6000.

Los Angeles County—Failure: Richfield Oil Corp.'s U. P. Unit 2, 8-2s-12w, E. Los Angeles area, abnd 10-10-46 at 8861.

Ventura County — Failure: Richfield Oil Tapo Fee B-1, 39-3n-18w, Simi area, abnd 10-10-46 at 1921.

Monterrey County — Failure: Texas Co.'s Currell 1, 4-21s-8e, Oasis area, abnd 10-11-46 at 3280.

ILLINOIS WILDCATS

Fayette County—Failure: R. L. Robbin's Outhouse 1, sw sw se 15-4n-1w, abnd 1452.

Shelby County—Failure: C. G. Davis' Hays 1, ne nw sw 24-11n-6e, abnd 2318.

Wabash County—Oil Discoveries: Magnolia's Pfeiffer 1, se ne nw 11-2s-14w, pump 12 bbls fr Cypress sand 2598-2601, td 3050.

Sam Malis et al's Litherland 1, nw nw se 20-1n-13w, flow 160 bbls fr McCloskey 2720-32, td 2809.

Wayne County—Failure: C. E. Skiles et al's Watkins 1, nw se sw 20-1n-7e, abnd 3276.

White County — Oil Discovery: J. W. Thompson's Gruggen 1, ne nw sw 13-5s-10e, pump 20 bbls fr McCloskey 3192-3207, td 3207.

White County—Failures: Nat. Assoc. Pet. Co.'s Bachman 1, sw nw nw 16-5s-9e, abnd 3305.

Texas Co.'s Douglas 1, se sw ne 17-7s-8e, abnd 3214.

INDIANA WILDCAT

Gibson County—Failure: Continental et al's Cooper 1 "D", sw sw sw 13-3s-14w, abnd 6408.

KANSAS WILDCATS

Marion County—Failure: Aladdin Pet. Co.'s Weygand 1, se se nw 22-19s-1e, abnd 3484.

Rice County — Failure: Royer & Farris' Wilkey 1, nw nw se 4-21s-8w, abnd 3534.

KENTUCKY WILDCATS

Butler County—Failure: Gurley Smith et al's Fee 1, 18-J-34, abnd 1110.

Webster County — Failure: Ross Bartmes' Duncan 1, 17-N-23, abnd 1953.

NORTH LOUISIANA WILDCATS

Bossier Parish—Oil Discovery: Barnsdall et al's Carter-Burton 1, c nw nw 26-23n-13w, Midway 1018, Arkadelphia 1675, Nacatoch 1841, Saratoga 2296, Massive Anhy 5170-5370, L. Anhy stringer 5486, Three Fingered lime 6280, Pettit porosity 6320, Travis Peak 6526, Cotton Valley 8205, black shale 8320, perf 185 shots 3228-65, pump 54.75 bbls, td 12,385, comp 10-1-46, pb 5262.

LaSalle Parish—Failure: Placid Oil Co.'s Hailey Est. 1, 660 fr sl 760 fr wl 7-7n-4e, abnd 9-30-46 at 4010.

Madison Parish—Failure: Atlas O&R Co.'s Dhu Thompson 1, c se sw 21-17n-10e, 1½ mi se Delhi prod, abnd 10-5-46 at 4004.

NORTH LOUISIANA OUTPOST

Richland Parish — Delhi Failure: Atlas O&R Co.'s R. E. Phillips 1, c nw se 25-17n-9e, ½ mi s prod, abnd 10-4-46 at 3815.

SOUTH LOUISIANA WILDCATS

Cameron Parish—Failure: W. T. Burton's Lake-State 1, 12,577 wl 7456 n of nec 1-14s-9w, on Calcasieu Lake Dome prospect, abnd 10-5-46 at 8477.

Lafourche Parish—Failure: Union of Calif.'s City of New Orleans 2, 4600 n 990 w fr sect 24-23s-22e, salt 8648, abnd 10-4-46 at 11,233.

MICHIGAN WILDCATS

Allegan County—Failure: R. W. Cooper's Mead 1, se sw nw 3-2n-13w, abnd 10-1-46 at 1495.

Arenac County—Failures: Basin Oil Co.'s Lehman 1, nw se ne 35-20n-5e, Dundee 2858, abnd 10-3-46 at 3070.

Don F. Rayburn's Swincicki 1, nw nw ne 28-20n-3e, Dundee 2935, abnd 10-5-46 at 3095.

Clinton County—Failure: Smith Pet. Co.'s Hocketra 1, nw ne sw 28-8n-4w, abnd 10-4-46 at 3010.

Gratiot County—Failure: Matlock and William's Spidel 1, ne sw sw 2-10n-2w, abnd 10-8-46 at 888.

Saginaw County—Failure: Fred W. Craft's Willie 1, n½ nw se 29-10n-4e, abnd 10-6-46 at 2925.

Van Buren County—Failure: Harry Stroud's Biermann 1, nw sw sw 3-2s-14w, abnd 10-7-46 at 1260.

MONTANA WILDCAT

Teton County—Failure: Jarvis & Marcelle's Flannagan 1, c sw nw 8-27n-5w, Penroy area, Ellis-Madison 2530, abnd 10-7-46 at 3012.

MONTANA OUTPOST

Glacier County — N. Cut Bank Failure: Union Oil Co.'s Superior 1, c sw ne 7-36n-5w, ½ mi e prod, Madison 3210, abnd 10-9-46 at 3250.

NEW MEXICO WILDCAT

Eddy County—Failure: Neil H. Wills et al's Crosby 1, se ne ne 7-20s-31e, elev 3458, salt 629-2070, abnd 10-9-46 at 2080.

OKLAHOMA WILDCATS

Cotton County—Failures: G. B. Howell's Butler 1, se sw se 24-3s-11w, abnd 2105.

Tearnan & Brown's Creswell 1, nw nw ne 17-4s-10w, abnd 1510.

Hedrick Brothers' Brinlee 1, se ne nw 13-4s-11w, abnd 1435.

L. H. Choate's Binson 1, nw se sw 22-4s-11w, abnd 2501.

Kay County—Failures: Earl Wakefield's Henke 1, ne ne se 31-25n-1w, abnd 4425.

Texas Co.'s Kahle 1, ne sw sw 18-28n-2e, abnd 4205.

Lincoln County—Gas Discovery: Olson Drlg. Co. et al's Masten 1, nw se sw 35-14n-4e, flow 3,500,000 gas fr Cleveland sand at 2995-3022, td 3022.

Murray County Failure: Anderson-Prichard Oil Corp.'s Jones 1, ne se nw 30-1n-2e, abnd 2015.

Noble County—Oil Discovery: T. T. Eason & Midland Cooperative's Carter-Boyes 1, se ne se 19-22n-1w, flow 128 bbls fr Mississippi lime 4808-11, td 4811.

Payne County—Gas Discovery: Mulberry Oil Co.'s Naumann 1, ne sw se 2-17n-5e, flow 1,900,000 gas fr Cromwell's sd, 2963-3000, td 3950.

Pontotoc County — Gas Discovery: Gado Prod. Co.'s Johnnie 1, sw sw ne 32-5n-7e, flow 2,250,000 gas fr Pennsylvanian sd 1475-82, td 1482.

Pontotoc County—Failures: Deep Rock Oil Corp.'s Bond 1, ne nw ne 23-4n-4e, abnd 3303.

Belgan Oil Co.'s Britt 1, se sw sw 20-4n-7e, abnd 2420.

Stephens County—Failure: Kingery Brothers' Smith 1, sw sw se 10-4s-9w, abnd 2005.

WEST TEXAS WILDCAT

Crockett County—Failure: J. T. Brewer-C. V. Nelms' Cox 1, nw ne nw sect 11, J. H. Gibson sur, elev 2464, abnd 10-9-46 at 1215.

WEST TEXAS NEW PAY TEST

Ector County—N. Goldsmith Silurian Oil Discovery: Phillips' R. B. Cowden-Bum 1, 667 snl 665 wel e½ of nw T&P Ry. 3, blk 45, T-1-N, 1/3 mi se of Devonian prod, elev 3302, base Permian 7850, no Devonian, Silurian 7900, Fusselman 8230, flowed 226 bbls 36.2-gr oil, 64 bbls sw, gor 1332/1, via ½-in, 500 gals acid through Silurian perforations at 8255-80, comp 10-11-46, td 8314, pb 8290.

WEST CENTRAL TEXAS WILDCATS

Callahan County—Failure: R. Kamon et al's Kennard 1, se se sect 26, E. T. Ry. sur, abnd 1897.

Jones County—Oil Discoveries: R. H. Roark-L. F. Hooker et al's L. R. Cade 1, 330 out nwc Lbr 4, Lge 150, DeWitt CSL sur, 1⅝ mi se of prod, elev 1831, pump 92 bbls 42-gr oil, gor 400/1, Swastika sd 2996-3013, shot 15 qts nitro 2996-3013 comp, 10-3-46, td 4603, pb 3013.

R. H. Roark-L. F. Hooker et al's F. C. Hodges 1, 467 snl 1650 ewl of A. Bell sur 6, 1⅛ mi se of prod, elev 1562, pump 25½ bbls 38-gr oil, gor 300/1, 500 gals acid 1939-44 comp, 10-3-46.

R. H. Roark-L. F. Hooker et al's E. T. Pitzer 1, 330 s 2640 e of nwc Lbr 25, but in Lbr 19, Lge 150, DeWitt CSL sur, 2⅝ mi se of prod, elev 1792, Swastika 2944, Ellenburger 5285, flow 115 bbls, via 3/16-in fr Strawn perf 4539-50, shot with 35 qts marbles, comp 10-11-46, td 5321, pb 4555.

Taylor County—Failure: Paul Steed-W. W. Wilson, Jr.'s, Norwood 1, sw ne ne T&P Ry. 10, blk 5, elev 2411, Dothan 2720, Noodle Creek 2810, Saddle Creek 3067, Coal 3077, Flippen 3098, Adams Branch li reef 4011, abnd 10-7-46 at 4160.

WEST CENTRAL TEXAS NEW PAY TESTS

Fisher County—Rotan Deep Failure: Sunray Oil Corp. (was Southern Oil Corp.'s) Robinson 2, (OWDD) 330 nsl 151 wel nw¼ H&TC Ry. 172, blk 2, otd 3537, elev 1959, abnd 6036.

Taylor County—Reddin Dothan Oil Discovery: West Central Drlg. Co. et al's Buston Horton 5, 330 snl 660 ewl sbdn 1, D. B. Corley sur, elev 1735, flow 96 bbls, 4000 gals acid via Dothan perf at 1845-49, dual-comp, flow 107 bbls 41-gr, nat via ¼-in fr Flippen open hole 2190-2206.

NORTH TEXAS WILDCATS

Baylor County — Failure: E. B. Clark's Cowan 1, sw nw nw T&NO Ry. 92, abnd 10-4-46 at 2725.

Montague County—Failure: W. W. Chambers et al's Taylor 1, 450 out sec of e 108 ac of 217-ac tr, T. Scott sur, abnd 10-1-46 at 2024.

Wichita County—Failure: Ashton et al's Cody 1-B, 150 out nec sw¼ blk 32, Waggoner Colony Lands, abnd 10-2-46 at 2000.

Young County—Failure: Morton & Elder's Hardin 1, (OWDD), 1320 nsl 330 wel R. D. Woodruff sur, otd 2127, elev 1167, Bend 3880, Marble Falls sd 4339, li 4399, Mississippi 4647, abnd 10-7-46 at 4756.

EAST TEXAS WILDCAT

Robertson County — Failure: United N&S Dev. Co.'s Dr. Hooper Ranch Co. 1, 930 fr nel 1150 fr nwl of 320-ac tr and R. Copeland sur, elev 379, Wilcox 1565-1580, Nacatoch 2980-3020, Gober 4430-88, Austin 4775-5067, Woodbine 5440-5570, Buda 5656, Del Rio 5750, Edwards 6110, abnd 10-4-46 at 6475.

EAST TEXAS BORDER COUNTIES WILDCATS

Angelina County—Failure: Bennett & Sorrells' E. P. McKnight 1, 330 fr nwl 1980 fr swl John Durst sur, Wilcox 895, Comanche 6064, no Woodbine, abnd 10-8-46 at 6380.

San Augustine County — Failure: Cambro Oil Co.'s Mrs. Annie T. Anderson 1, 3625 e of wl 660 s of nl B. W. Harvey sur, Corriza 1312, Wilcox 2490, abnd 9-30-46 at 4305.

SOUTH CENTRAL TEXAS WILDCATS

Atascosa County—Failure: Humble's Edward Matocha 1, 467 fr n&el 411-ac lse, Wm. McFaddin sur 522, on Dobrowolski prospect, Edwards li 7189, abnd 10-3-46 at 7252.

Bexar County—Failure: Walter H. Bode-Pegg Bros.' John Lowe 1, 330 se th 330 ne at ra fr wly/cor lot 5, blk 57, S. A. Irr. Farms sbdn, Henry Verm sur 195, abnd 9-30-46, 989.

SOUTHWEST TEXAS WILDCAT

Duval County—Failure: J. W. Gorman et al's Florence D. Lowe 2, 1650 fr nl 2310 fr el AB&M sur 76, 1½ mi e ne Labbe fld, abnd 9-30-46 at 2705.

SOUTHWEST TEXAS NEW PAY TEST

Starr County—S. Rincon Gas Discovery: W. H. Holland's M. M. Garcia 1, 330 fr n&wl blk 21, sbdn Porc 91, 3400-ft pay shaled out, pay 2925, perf 48 shots 2925-37, flow gas, no gge, ¼-in, tp 75 lbs, com 9-20-46 at 3930.

LOWER TEXAS COAST WILDCATS

Bee County—Failure: W. Earl Rowe's T. J. Heard 1, 467 fr nly/nl 467 fr wly/el 1900-ac tr on 2240-ac lse, Washington Stevens sur, abnd 9-30-46 at 4200.

Brooks County—Failure: H. H. Gowell's L. Villareal 1, 330 fr sl 1454 fr wl 4156 fr el CCSD&RGNG sur 809, 330 fr s&wl 80-ac lse, 1 mi nw Alta Verde fld, abnd 10-2-46 at 4094.

Cameron Parish—Failure: Phillips' R. L. Roloff 1, 600 fr sl between lots 73, 74 in 41.68-ac lse, Arroyo Gardens Unit 1, sh 12, Espirito Santo Gr, abnd 9-30-46 at 12,496.

Live Oak County—Failure: Humphries & Hotchkin's Elroy & Eugene Adlof 1, 330 fr n&el 98-ac lse, Bridget Haughey sur, Pettus 2058, abnd 10-1-46 at 2094.

Nueces County—Failure: L. M. Lockhart's J. W. Porter 1, 467 fr n&wl 100-ac lse and lot 8 Roberts & White sbdn, John J. Elliff Tr, Agua Dulce area, abnd 9-27-46 at 6860.

UPPER TEXAS COAST WILDCATS

Brazoria County—Failure: General Crude's

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Belle H. Wisdom 7, 1600 fr sel blk 55 850 fr swl blk 56, 840-ac tr, Abraham Darst sur, ¼ mi w old Damon Mound area, abnd 10-6-46 at 4744.

Fayette County—Failure: W. J. Rasnik's Theo. Krakosky 1, 1660 fr ne&nwl 82-ac, 660 sw of nwl of G. Riddle sur, La Warda area, abnd 10-1-46 at 4020.

Grimes County — Failure: Humble's Geo. Sealy, Tr 1, 660 fr wl 1980 fr sl 700-ac lse, Ben F. Smith sur, abnd 10-3-46 at 7893.

Liberty County—Failure: Grubb & Hawkins' E. B. Pickett, Jr. et al 1, 660 fr n&el 404.5-ac lse, T&NO sur 14, 2 mi e ne Cottonwood disc well, abnd 10-4-46 at 8325.

WESTERN CANADA WILDCATS

Central Alberta Plains—Lloydminster Oil Discovery: Lloydminster Oil Producers' No. 3, lsd 13 11-50-2w4th, pump 100 bbls, Comp 10-1-46 at 1998.

Rusylvia Failure: W. G. DeKoch's Iscris-M 3, lsd 5 22-54-6w4th, Devonian Lime 2136, abnd 1-10-46 at 2138.

West Viking—Failures: Anglo Canadian, Home Oil, C.&E. Corp.'s West Viking 2, abnd 1-10-46 at 3282.

South Alberta Plains—Princess-Brooks Gas Discovery: Princess-Brooks Syndicate's No. 1, lsd 13 17-19-13w4th, flow 23,000,000 plus oil show fr Sunburst sand 3278-98, comp 1-10-46 at 3415.

Pinhorn Failure: McColl-Frontenac-Union of Calif.'s No. 6D-12-4-8, abnd 8-10-46 at 2200.

WESTERN CANADA OUTPOST

Provost Gas Extension: Imperial Oil's Provost 4, lsd 6 28-37-2w4th, flow 2,100,000 gas fr Viking sand, comp 10-1-46 at 2551.

WILDCAT STARTS

CALIFORNIA

Kern County: Gannon, Gannon & Aslin's 69-J-5, 36-29s-20e, Temblor Ranch area, prep to spud.

Richfield Oil Corp.'s Union Corehole 1, 19-28s-21e, S. Belridge area, dr.

Solano County: Amerada's E. Wineman 1, 35-6n-2e, Dixon area, ru.

Peter Cook, Jr.'s, Upper Unit 2, 15-5n-3e, Ryker's Island area, dr.

Yolo County: Texas Co.'s Stephani 1, 28-9n-1w, Dixon area, lcn.

Santa Barbara County: Rothschild Oil Co.'s Orella 1, 31-5n-30w, Capitan area, lcn.

Monterey County: Texas Co.'s Cooper 1, 19-21s-9e, San Lucas area, grading roads.

FLORIDA

Gulf County: Pure's Pick-Hallinger 1, nec 12-9s-11w, mim.

ILLINOIS

Clay County: A. J. Hammer's McCulley 1, ne ne nw 13-4n-5e, drlg.

Coles County: Milo Ritchie's Rennels 1, nw nw nw 10-11n-10e, drlg.

Edgar County: William P. Ford et al's Comstock 1, nw nw 27-13n-14w, drlg.

Gallatin County: W. O. Allen's Wilson 1, se se nw 31-7s-10e, lcn.

Hamilton County: Tex Harvey Oil Co.'s Vinyard 1, nw sw sw 23-5s-7e, drlg.

Jasper County: John W. Rudy's Dewhirst 1, se ne se 16-5n-9e, drlg.

Macoupin County: Dale E. Lambert's Griffith 1, nw se ne 26-7n-9w, lcn.

Marion County: George McDevitt's Zollar 1, sw sw sw 30-3n-2e, lcn.

Paul Doran et al's Millican Estate 1, sw sw se 16-3n-4e, lcn.

Wabash County: Hayes & Wolfe's Meyer 1, sw sw nw 8-1s-13w, drlg.

Sam Malias' Fite 1, ne ne nw 7-1n-13w, drlg.

Allied Drlg. Co.'s Lanquary 1, se se nw 31-2n-12w, lcn.

Wayne County: Texas Co.'s Hines 1, se se se 1-1s-9e, drlg.

Phillips' Golden 1, se se ne 28-1s-9e, lcn.

INDIANA

Clay County: G. H. Froderman et al's Everwine 1, nw nw nw 19-10n-6w, drlg.

Posey County: Nat. Assoc. Pet. Co.'s Fuhrer et al 1, nw se nw 34-5s-14w, lcn.

Vanderburg County: George & Wrather's Hamler 1, sw sw se 6-5s-11w, lcn.

KANSAS

Barton County: Royer & Farris' Jurgeson 1, se se nw 16-19s-13w, lcn.

Phillips' Asa 2, sw sw sw 13-20s-15w, lcn.

Ellis County: Huber & Baco's Furthmeyer 1, nw se 26-12s-16w, lcn.

Texas Co.'s Drelling 1, sw sw sw 15-13s-17w, lcn.

Gove County: Superior's Preifeit 1 "H", sw sw sw 32-13s-29w, lcn.

McPherson County: W. L. Hartman's College 1, c nl/2 nw nw 20-20s-1w, drlg.

Meade County: Stanolind O&G Co.'s Rickers 1, sw sw ne 27-32s-29w, lcn.

Reno County: Drillers Gas Co.'s O'Hara 1, cne sw 30-24s-7w, woc 220.

Rooks County: Sinclair Prairie's Bepard 2, nw nw nw 18-9s-18w, mim.

Skelly's Gick 1, nw ne sw 30-10s-17w, lcn.

Rush County: Alkay Oil Co.'s Greenwalt 1, ne sw sw 17-19s-16w, lcn.

Darby & Bothwell et al's Thalheim 1, ne nw 10-19s-18w, lcn.

Scott County: Snyder & Atlantic's Mark 1-D, cse sw 17-20s-33w, lcn,

KENTUCKY

Henderson County: Sun's Ball 1, 24-P-22, lcn.

NORTH LOUISIANA

Morehouse Parish: Texas Co.'s Doles 1, c sw nw 10-23n-8e, Smackover li test.

SOUTH LOUISIANA

Jeff Davis Parish: Stanolind's W. B. Markham 1, 1650 w 990 s of nec 33-9s-5w, 1 mi s of Welsh Dome S. flk prod, 9500-ft test.

MICHIGAN

Allegan County: J. E. Hood's Palm 1, sw se sw 23-1n-16w, dr.

Don L. Linsley's Hardin 1, sw se sw 7-2n-11w, dr.

Gratiot County: McClure Drlg. Co.'s Crum 1, ne nw nw 21-12n-4w, lcn.

Ionia County: Oil Producers' Cook 1, nw nw nw 11-7n-5w, dr.

Isabella County: Bliss M. Keeler's Johnson 1, nw nw se 32-13n-5w, rig.

Kent County: S. L. McCall's Hull 1, se se sw 8-9n-11w, dr.

Wexford County: W. A. Comstock's Carlson 1, se nw se 17-21n-9w, lcn.

MONTANA

Glacier County: Montana Power's Tribal 1, se se sw 10-37n-7w, Regan Structure, spud.

NEBRASKA

Gosper County: Stanolind O&G Co.'s Schoen 1, sw sw sw 34-5n-21w, drlg.

OKLAHOMA

Carter County: C. W. Tomlinson's Hollingsworth 1, sw nw nw 26-5s-1e, drlg.

Choctaw County: H. F. Paul's North American Life 1, se se se 29-5s-16e, rur.

Cotton County: W. A. Delaney's Hooper 1, ne ne ne 5-2s-11w, mit.

Barbre & Griffen's Sch-gel-zel 1, nw sw nw 19-2s-11w, lcn.

Roy L. Fisher's Wallace 1, sw sw sw 3-2s-12w, drlg.

H. C. Howell's Griffin 1, sw sw sw 29-2s-12w, lcn.

H. A. Hamilton's Powell 1, nw nw sw 32-2s-12w, lcn.

Frank Murta's Hertzler 1, sw se ne 35-2s-13w, drlg.

Snoddy Brothers' Bull 1, nw nw se 20-3s-9w, rur.

C. Andrade, III's, Tollitt 1, se se ne 7-3s-11w, drlg.

Dickson Oil Co.'s Powell 1, ne nw se 6-3s-12w, lcn.

A. W. Whitaker's Zwelaker 1, ne se nw 20-3s-12w, drlg.

Cochran & Cain's Worsham 1, nw ne se 15-4s-10w, spud.

C. H. Featherston's Waller 1, se se ne 23-4s-10w, lcn.

L. H. Choate's Gibson 1, se se se 29-4s-10w, lcn.

Morgan Brown's Shelton 1, sw sw ne 30-4s-10w, rur.

Nixon Pet. Co.'s Ninz 1, ne ne se 30-4s-12w, cellar.

Nixon Pet. Co.'s Miller 1, se se se 8-5s-12w, lcn.

Garfield County: Vickers Pet. Co.'s Andrews 1, sw sw sw 16-21n-4w, woc.

Logan County: Piggott Oil Co.'s Fry 1, nw se nw 22-19n-2w, dk.

McIntosh County: J. M. Young et al's Fee 1, nw ne ne 11-11n-18e, rust.

Okfuskee County: Ralph Fillmore's Palmer 1-A, c se nw 34-11n-10e, lcn.

Oklahoma County: Gulf's Pauline 1, ne ne sw 23-14n-2w, lcn.

John J. Fleet's Patten 1, se se ne 26-14n-4w, lcn.

Pontotoc County: J. W. Dillion's Byrd 1, ne se sw 35-3n-7e, drlg.

Seminole County: Sam Rhoades' Letka 1, ne ne ne 32-8n-7e, lcn.

Sohio's Reed 1, se se nw 29-10n-7e, lcn.

WEST TEXAS

Andrews County: M. H. Marr-Grady Vaughn's Lotus Oil Co. 1-6, c sw nw PSL 6, blk A-47, 9000-ft Devonian test.

M. H. Marr and Grady Vaughn's Lotus 1-7, c se sw PSL 7, blk A-47, lcn.

M. H. Marr and Grady Vaughn's Lotus 1-8, c se se PSL 8, blk A-47, lcn.

M. H. Marr and Grady Vaughn's Lotus 1-26, c sw sw PSL 26, A-48, lcn.

Stanolind's J. L. Young 1, 660 nsl 1994 wel PSL 6, blk A-48, 7500-ft Clear Fork test.

Fred Turner, Jr., et al's M. M. Fisher-Shell 1, c nw nw PSL 16, blk A-36, 1 mi n of Shafter Lake prod, 5000-ft San Andres test.

Ector County: Lion Oil Co.'s TXL 1, c nw nw T&P Ry. 17, blk 46, T-1-S, 1 mi e of Wheeler prod, 10,600-ft Ellenburger test.

Garza County: Midland Oil Corp.'s D. W. & J. H. Eubanks 1, se se se W. C. Ry. 15, blk 4, near c of n line of county, 3000-ft cable test.

Hale County: Stanolind's E. L. Fisher 1, c sw sw EL&RR Co. 5, blk C-L, 7000-ft test.

Scurry County: Humble's T. C. Davis 1, c sw sw H&TC Ry. 339, blk 97, 8500-ft Ellenburger test.

Winkler County: Stanolind's Sealy - Smith 16, c se se G&MMB&A 70, blk A, 1 mi w by n of N. Monohans field, 6500-ft Clear Fork test.

Stanolind's Sealy - Smith 17, c nw nw G&MMB&A 33, blk A, 1 mi e by n of Sealy-Smith pool, 6500-ft Clear Fork test.

C. A. McDaniel and L. A. Beecherl's Clyde Barton 1, sw sw nw PSL 26, blk B-3, Kermit fld deep test, 5300-ft Glorietta test.

WEST CENTRAL TEXAS

Coleman County: Ped-Og Syndicate's C. E. Kennedy 1, 660 out nwc of S 195 ac, or 1150 nsl 660 ewl of F. Owen sur 310, 2 mi n Talpa, 3600-ft cable test.

Jones County: Jones-Stasney & Mohawk Dr. Co.'s E. A. Hicks 1, 330 ewl 1320 nsl sect 5, Orphans Asylum Lands, 4500-ft Palo Pinto rotary test.

Shackelford County: Street Investment Co.'s W. L. Green 1, 960 snl 2040 wel of s½ T&P Ry. 49, blk 12, 1200-ft cable test.

Taylor County: West Central Dr. Co.-Ungren-Frazier & Harry Reynolds' Rhodes 1, 330 snl 1573 wel T&P Ry. 16, blk 5, mim for 4500-ft test.

NORTH TEXAS

Archer County: Grace & Grace's Kunkel 2, 750 out nec blk 12, Isaac Holeman sur, Crawford sbdn, 1300-ft rotary test.

Foard County: Stanolind's Furd Halsell 1, 1980 out sec John Shearer sur, 4500-ft test.

Montague County: Continental's L. D. Moss 1, 467 out sec J. W. Clanton sur, 3 mi w of prod, 6200-ft Ellenburger test.

Wichita County: C. N. Percifield et al's Ecklecamp 1, 150 snl 450 wel blk 245, Waggoner Colony Lands, 2000-ft rotary test, sp.

L. V. Hull & Sons' Kempner 2-A, 150 out sec blk 61, KWVFL sbdn. 800-ft cable test.

EAST TEXAS

Limestone County: Dail Goodson et al's R. L. Nance 1, 4160 fr swl 150 fr m/s/nwl of J. D. Brown sur, 3½ mi s Thornton, Woodbine test, sp.

SOUTH CENTRAL TEXAS

Bexar County: W. D. King's Joe H. Tondre 1, 660 fr wl 1554 fr sl 188.9-ac lse, W. M. Bumstead sur 25½, ru 700-ft test.

Williamson County: A. J. Marsh's Frank Hajl 2, 330 fr nl 65-ac lse, sect Hardy Pace sur, 7 mi se Taylor, lcn.

SOUTHWEST TEXAS

Starr County: T. E. Stephens' M. Hinojosa et al 10, 4563 se of nwl 330 ne of swl 4767.08-ac lse, Porc 109, 110, 111, 7390 fr Jakalak gas area, 2500-ft test.

Webb County: Dulaney Oil Co.'s Frost Nat. Bnk. 2, 2740 fr sly-sl 770 fr wl A. Chapa sur 504, 1 mi w Mirando City fld, plts.

Magnolia's Billings Rch. 2, 2310 fr el 2310 fr sl CCSD&RGNG sur 52, blk 1, 11,570-ac lse, 4 mi w sw Lopez fld, 5 mi ne Carolina-Texas fld, 3000-ft test.

LOWER TEXAS COAST

Goliad County: Dillard & Waltermire's O. P. Jacobs Heirs 1, 660 fr se&swl 174.5-ac lse, 550 se of nwl Peter Grass sur, 1½ mi ne Weser fld, 9000-ft test.

Jim Wells County: Bridwell Oil Co.'s R. C. Miller 1, 330 se of m/nwly/interior cor 256-ac lse, 1800 fr e&wl B. Lopez de Jean Gr, 1 mi s Orange Grove fld, 5850-ft test.

H. J. Mosser-W. R. Quinn's Chas. Mull 1, 467 fr n&el blk 47, 80-ac lse, Comanche Crk. Irr. Co. sur, 1½ mi w Alice fld, 5500-ft test.

Live Oak County: Roxie Wright et al's S. F. Beall Est. 1, 660 fr nwl 2640 fr nel 900-ac lse, 660 fr nwl 13,000 fr swl W. J. Cannon sur, 3 mi s sw Mt. Lucas fld, 3½ mi s ne Hinnant fld, ru 6500-ft test.

Nueces County: L. M. Lockhart's F. & G. Prochaska 1, 660 fr s&el 460-ac lse, partition of Wright lands. V. L. de Herrera Gr, 4700 ne n prod in Agua Dulce fld, spud 7000-ft test.

San Patricio County: Republic Nat. Gas Co.'s Carl Smith 1467 fr n&wl 80-ac lse, ½ mi s F. M. Boykin's Hutto 1, new pay disc on sw flk Midway fld, 6500-ft test.

Victoria County: Floyd L. Karsten's Luling Foundation 1, 466 fr ne&nwl 192-ac lse, J. S. Hendershot sur, ¾ mi sw E. Teleferner fld, 4500-ft test.

UPPER TEXAS COAST

Austin County: Phillips' Louise Schultz et al 1, start m/ely/cor F. Boecker & O. Hess sur 253.9 sw alg sel th s 40° 00 mins e 724.3 to lcn on 226-ac tr, John Hodge sur, Brenham Dome area, lcn.

Brazoria County: Perkins Oil Well Drlg. Contra.'s M. L. Mayes 1, 330 fr sel 30 fr nel 62.65-ac lse, Geo. Tennille sur, off nw flk W. Columbia Dome, 6200-ft test.

Chambers County: John W. Mecom's E. Ker Cade et al 2-B, 330 fr sel 300 fr swl C. T. Cade sur and 575-ac lse, se flk High Island, 7500-ft test.

Harris County: Eli Marks' A. B. Cohn Est. 1, start nec 248-ac lse at Cedar Bayou, th 702.4 s 9° 10 mins e to lcn, ¾ mi w Esperson prod, w flk of Dome, in Meredith Duncan sur, 9500-ft test.

Matagorda County: A. H. & C. L. Rowan-Texas Gulf Prodn. Co.'s M. L. Robertson 1, 467 fr nel 467 fr sel of lot 21 Moore Cortes Canal sbdn, 63-ac tr, D. Etherton sur, 3 mi s N. Markham fld, 11,000-ft test.

WESTERN CANADA

Saskatchewan: Lloydminster — Lone Rock Area: Southwest Syndicate's D. B. 1, nw lsd 6 13-48-28w3rd, drlg.

C. H. Withers-Lone Rock Oil Co.'s Withers-Lone Rock 1, ne lsd 13 6-47-26w3rd, rig.

Battleford: Community Services-Battleford Syndicate 1, lsd 8 30-43-16w3rd, in Battleford Town, drlg.

Central Alberta Plains—Provost: Commoil Ltd's Provost 1, lsd 5 24-35-2w4th, drlg.

Imperial Oil Provost 5, lsd 7 22-38-3w4th, drlg.

Manville: Waintown G&O Co.'s Manville 1, lsd 6 28-50-8w4th, lcn.

Northern Alberta—Peace River: Acme Drlg. Co.'s Peace River 1, lsd 1 17-84-21w5th, rig.

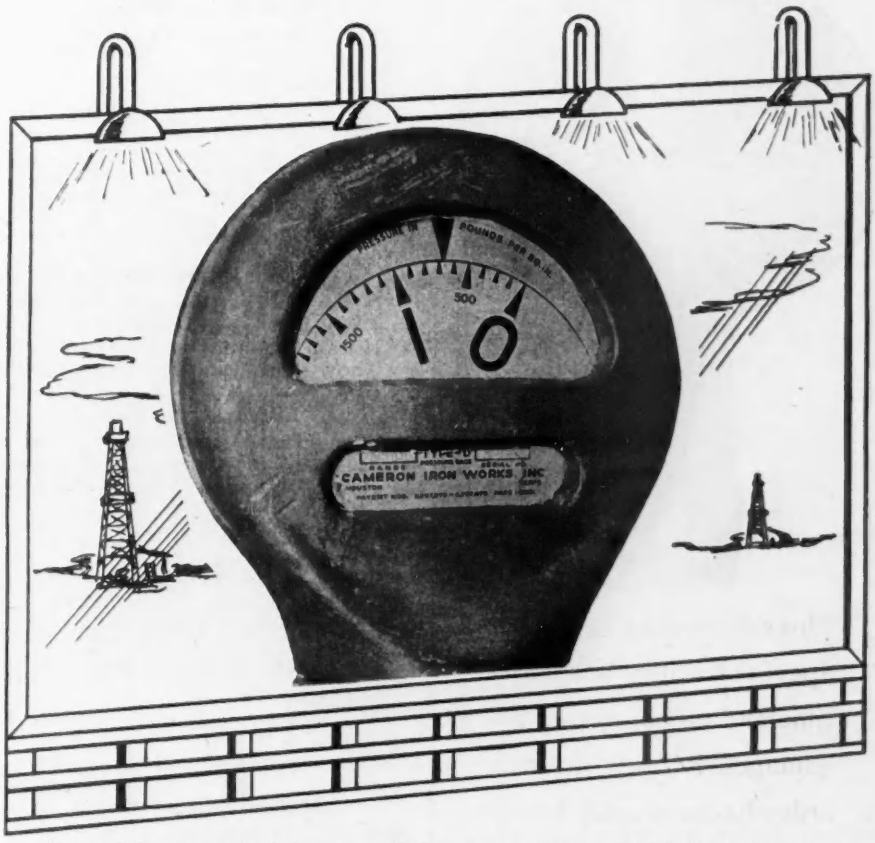
South Alberta Plains — Princess - Brooks: Princess-Brook Syndicate's No. 2, lsd 3 21-19-13w4th, drlg.

Pinhorn: McColl-Frontenac-Union of Calif.'s No. 11A-35-2-8, lsd 11 35-2-8w4th, se 10 ac., drlg.

Ajax Safety Record

Employes of the Ajax Pipe Line Corporation on August 31 completed 12 consecutive months without a disabling injury. Congratulations and appreciation were extended by the managements of both the Ajax and Interstate Oil Pipe Line Company. Employes, numbering approximately 140, worked a total of 329,013 man-hours.

Like Reading A Billboard



Users of this gauge don't have to walk from every point on the job for a close-up look . . . nor strain their eyes to make out miniature figures . . . nor squint at a jittery dial to get a pressure reading. They read, at a glance, the billboard figures and large scale divisions on a clear, steady dial through a colorless, unbreakable plexiglass face from distances of 30 feet or more. It's easy to keep a constant record of your mud, water, oil or gas line pressure with the Cameron Pressure Gauge. That's why it so quickly won worldwide acceptance.

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SQUEAKS from the BULL WHEEL

There You Are

The new head man at an insane asylum was trying to convince an inmate that he wasn't Napoleon.

"I know dern well I'm Napoleon!" cried the patient.

"Who told you so?"

"God did!"

Came a voice from the next bunk: "I did not!"

Pertinent Questions

"Mama, dear, where doth all those gweat big elephants at the zoo come from? And don't try to thtall me off wif that ol' gag about the thtork!"

Sign of the Times

"Any sugar today, Mr. Grocer?"
"Nope."
"Got any bacon?"
"Nope."
"How about some soap?"
"Nope."
"Say, you're out of everything. Why don't you lock up this joint and go home?"
"Can't buy a lock."

Let's Start Over

"If I'm the first girl you ever kissed, how is it you kiss so well?"
"If I am the first man who ever kissed you, how do you know I kiss so well?"

Life Is Like This

Know what Caesar said when he couldn't find a bathroom in Ceopatra's apartment? He said: "This is uncanny!"

Poet's Nook

Love is like an onion;
You taste it with delight,
And when it's gone you wonder
Whatever made you bite.

The Woman's Wit

"Shopping Today?"
"Yes, I'm trying to get something for my husband."
"Had any offers?"

Modern Mother Goose

Jack and Jill went up the hill,
Upon a moonlight ride;
When Jack came back
His eye was black.
His pal, you see, had lied!

'Scuse It, Please

"Well, guess I might as well put the motion before the house," said the strip-teaser as she sashayed out on the stage.

Hints for Householders

"But, darling, why don't you want me to wear those tights in the amateur show?"

"Well, frankly, I don't care to have everybody in town saying I married you for your money."

Ditto for Householders

She: "I was wrong, dear, and you were right."

He: "Forgive me, darling."

Her Money's Worth

"How much do you charge to take children's photographs?"

"Six dollars a dozen, Madam."

"In that case, you'll have to wait awhile. I only have 11 at the moment."

A Friend in Need

"Got a pen you can lend me?"
"Sure, pal."
"I seem to be out of paper, too."
"Here you are."
"Don't happen to have a stamp?"
"Yep. Right here."
"Going past the mail box?"
"Yep."
"Then wait a minute and mail this letter. And by the way, what's your wife's address?"

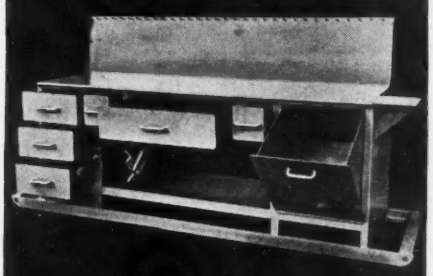
Time Without End

"Bashful, aren't you?"
"Yes, Ma'am. I take after my daddy."
"Was he very bashful?"
"Shore was. My ma said if he hadn't been so bashful I'd of been four years older."

Business First

"Doctor, I want you to vaccinate me where it won't show."
"Yes, Miss. My fee is $10 in advance."
"Why in advance?"
"Because I often weaken in such cases and don't charge anything."

OWEN



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HOUSTON, TEXAS

Oscar Lasse has been made personnel manager of The Texas Company, with headquarters in New York, succeeding the late **Charles O. Strahley.** He has been with the company for 30 years, having been connected with the personnel department since 1929. He started in 1916 as a stenographer in the railway traffic department in New York.

R. H. Trompeter, scout for Shell Oil Company at Las Animas, Colo., has been elected president of the Colorado Oil Scouts Association, and **Bea McCune,** scout for The California Company, Denver, has been elected secretary-treasurer.

W. O. Stallings, former captain in the Air Corps, has been transferred from Dallas headquarters of the Seaboard Oil Company to Midland for scouting duty in West Texas.

J. L. Quinn, Fort Worth district land man for Warren Oil Corporation, has resigned to operate as an independent in East Texas, with headquarters in the Owen Building, Tyler.

R. G. Rice and **W. C. Norman** are president and secretary, respectively, of The Coast Company, Delaware corporation with capital stock of 100,000 shares of no-par value that has obtained permit to operate in Texas. District headquarters are located in the Commerce Building, Houston.

L. C. Gaines of San Antonio and associates have obtained Texas charter for the Gaines Drilling Company, capitalized at $50,000.

T. J. Johnson, Jack Levering and **G. L. House,** all of Abilene, Texas, have organized the Western Oil Development Company, with headquarters in the Grant building, Abilene.

V. E. Cook and **Chas. E. Thompson,** both of McAllen, Texas, have incorporated the firm of Mayfair Minerals, Inc., with capital stock of 3000 shares at $100 each.

Dr. Herman F. Mark, professor of organic chemistry at Polytechnic Institute, Brooklyn, spoke on "Mechanism of Polymerization Reactions" before the Oklahoma Section, American Chemical Society, at Bartlesville. A meeting will be held in Bartlesville October 26, and Otto Beeck, Shell Development Company, will speak on "Spectroscopic Methods of Analysis."

Dr. V. E. Monnett, director of the School of Geology, University of Oklahoma, spoke on "The History and Future of Oil Development in Oklahoma" at an Oklahoma City Chamber of Commerce oil and gas division meeting.

Dr. Carl Moore, University of Oklahoma, spoke before the Oklahoma City Geological Society on "Geology of the South Moore Field."

Robert D. Walker has become associated with Oilfield-Industrial Export, Inc., New York. At present he is on an extensive trip through the fields of South America and the West Indies for the company, after which he will be permanently located in New York. He has had ten years' experience in the oil fields of the Southwestern U. S.

Robert D. Walker

J. C. Martin, Jr., formerly geologist with Crown Central Petroleum Corporation, has joined the geological staff of Texas Gulf Producing Company with headquarters in Houston.

Tom G. Matlock has been named assistant to **Sidney M. Witt,** tax counsel for Sunray Oil Corporation. Matlock was formerly tax agent with Transwestern Oil Company in San Antonio for ten years.

R. O. Wilson has been added to the staff of Continental Oil Company. He was a former state district judge in Oklahoma, and has recently been engaged in the practice of law at Ponca City, Okla.

E. M. Compton, Merle G. Tucker and **Leah Tucker,** all of Houston, have organized the Combro Oil Company, with headquarters at Houston.

Frank L. Thompson, Army officer veteran of the Pacific, has joined the drilling contracting firm of Thompson-Carr, Inc., Houston, and assigned to the Permian Basin district office at Midland, Texas.

Thomas A. Hendricks of the U. S. Geological Survey spoke on "The Mineral Resource Situation of the Former Japanese Empire" before the Tulsa Geological Society. Hendricks recently returned to the United States from a tour of duty as chief of the mining and geology division of the Natural Resources Section, General Headquarters, in Tokyo.

A. D. Stoddard, formerly vice president of Halliburton Oil Well Cementing Company, has acquired an interest in Sooner Well Service Company, Duncan, Okla., and will manage the company's business affairs.

Elmer J. Weis, vice president of Pacific Pumps, Inc., has been elected to the board of directors and also appointed general manager. He has been with the company since its establishment by his brother, **Arthur R. Weis,** and himself in 1923.

Ned Burnham, vice president of California Commercial Company, Standard Oil Company of California subsidiary, was a passenger on the eastbound air liner which crashed near Cheyenne, Wyo., recently. Burnham was shaken up but has returned to his post in the company's Washington office. Two were killed in the crash.

Rodman K. Cross, who resigned recently as district geologist in the Los Angeles Basin for Richfield Oil Corporation, has joined the exploration department of Hancock Oil Company, Long Beach, Cal.

John A. Woodward, president of St. Anthony Oil Corporation, Los Angeles concern with a capital stock of $1 million, has established an office in the Commerce building, Houston.

Chris A. Vogt has joined J. H. Howard & Company, Houston, as assistant to **J. H. Howard.** He was formerly tool engineer at Cameron Iron Works and Reed Roller Bit Company.

Dr. Gustav Egloff, director of research of the Universal Oil Products Company, was named chairman of the petroleum division of the American Chemical Society, succeeding **Dr. Stewart S. Kurtz, Jr.** of the Sun Oil Company. **A. N. Schanen** of Socony-Vacuum Oil Company's general laboratories at Paulsboro, N. J., is vice president; and **Carl R. Wagner,** consulting chemist of Bartlesville, Okla., was reelected secretary-treasurer. Kurtz and **W. E. Bradley,** research supervisor for Union Oil Company, were named to the division's executive committee.

Kenneth Austin, financial writer for *The New York Times* since 1927, has joined the public relations staff of the United States Steel Corporation. Austin, who joined the staff of *The Times* in Paris in 1925, for many years has handled news of the steel industry for his newspaper.

J. C. Lungerhausen has joined the engineering staff of Bowser, Inc.'s industrial pump division at Ft. Wayne, Ind., as chief development engineer. For the past five years he was development engineer for Blackmer Pump Company, Grand Rapids, Mich.

Horace D. Acaster has been appointed to the new post of manager of industrial relations for Calco Chemical Division, American Cyanamid Company. He went to Calco in 1926 as a production supervisor, after some years with E. C. Klipstein & Company and Atlantic Dyestuff Company. He spent several years in South Africa constructing and operating a plant for American Cyanamid Company, and was project engineer of a subsidiary, Chemical Construction Company. Since 1943 he has been plant manager of Stamford Laboratories.

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MEN IN THE INDUSTRY NEWS

C. R. Dobson was elected vice president in charge of operations for H. K. Porter Company, Inc. He was formerly chief industrial engineer of Jones & Laughlin Steel Corporation. In his new capacity he will supervise operations of the seven Porter manufacturing plants.

C. R. Dobson

»

J. R. Thompson, with The B. F. Goodrich Company since 1930, has been named Denver district manager, Industrial Products Sales Division. Thompson's first position with Goodrich was in the textile division, Martha Mills, Silvertown, Ga. He joined the Industrial Products sales division in in 1933. He succeeds **John Gulledge,** who has been acting district manager in Denver and will now be assigned other duties in the Industrial Products Division.

»

B. P. Spann, advertising manager of Gardner-Denver Company, has been named personnel and industrial relations director, and will be succeeded by **D. F. Tunnicliff.** Spann has been with the company since 1934, except for 38 months in the Navy. Tunnicliff has a newspaper background, and also served in the Navy.

»

John M. Abbey has been named district representative of the central sales division for Caterpillar Tractor Co., Peoria, Ill. Abbey joined "Caterpillar" as a member of the accounting department in 1936. He later served in the treasury and engine sales departments, entering sales training division last April.

A. G. Evans-Lombe, vice president in charge of sales, and **J. A. Lyne,** chief field engineer, The Parkersburg Rig & Reel Company, left Miami October 11 for an extended trip through oil fields in Colombia and Venezuela. They will make the entire trip by air and plan to spend about a month covering all the principal oil fields in the two countries. Most of their time will be devoted to studying operating conditions and equipment needs of the South American fields. They expect to return about November 15.

A. G. Evans-Lombe

»

Gene B. Caperton of Shamrock, Texas, has been elected president of the student chapter of the A.I.M.M.E. at Texas A. & M. College. Other officers include **William B. Gill,** vice president; **Julio C. Casas, Jr.,** secretary, and **Gene M. Goodwin,** treasurer. Prof. **R. L. Whiting** of the petroleum engineering department was chosen faculty sponsor.

»

Sherman Miller, chief mechanical engineer of the American Locomotive Company at Schenectady, N. Y., since 1941, has been appointed vice president in charge of production engineering. **Raymond J. Finch** has been appointed chief mechanical engineer.

»

Fayette Leister has been elected by directors of The Fafnir Bearing Company, New Britain, Conn., to the office of vice-president in charge of engineering. Leister has been identified with Fafnir since 1921.

Deaths

Keefer L. Laufman, 54, auditor of the pipe line department for Sinclair Refining Company, Independence, Kansas, died October 9. He had been with the Sinclair interests for 28 years and was located in Tulsa for ten years prior to the merger of Prairie Oil & Gas Company and Prairie Pipe Line Company with the Sinclair interests in 1932.

»

Fred Holloway, 58, of Wichita Falls, Texas, chief clerk, Sinclair Refining Company, pipe line department, died October 8.

»

N. S. Goins, 51, Oakland, Calif., a former Tulsan, died at the home of his mother in Tulsa October 10. He was a former machinist for the Wheatley and National Tank companies.

John M. O'Day, general traffic manager of Sinclair Refining Company prior to his retirement in August, died October 10. He had been with Sinclair since 1920 and in 1927 was elected president and director.

»

C. O. Anderson, 53, chief engineer for The Texas New Mexico Pipe Line Company and an employe of The Texas Pipe Line Company previously, died October 15 of a heart attack at Iraan, Texas.

»

T. B. Hill, driller, was fatally burned October 13 when the M. B. Chastain and Crow Drilling Company's initial test in the Tri-Cities field, East Texas, blew out and caught fire while preparing to complete.

Dowell Test Cylinder Simulates Conditions Found in Deep Wells

In order to test and to carry on experiments under conditions comparable to those encountered in 10,000-foot wells, Dowell Incorporated, of Tulsa, has installed at its research center in Tulsa, a high pressure test cylinder which will simulate pressures and temperature conditions necessary to test electrical bottom-hole equipment used in such deep wells. The cylinder, which is shown being placed in position for insertion in the ground within the three-story housing, weighs approximately 48,000 pounds and is 26 feet long. All but about one foot of the cylinder will be underground. Inside dimensions are 15⅛ inches and wall thickness is 6¾ inches. A plug weighing 1200 pounds fits into the top of the cylinder, which is equipped with electrical heaters and an insulating blanket around the shell. High-pressure pump will simulate 10,000-pound bottom hole working pressure and the heaters will develop 300° F. Temperature and pressures will be under constant control and results recorded on instruments. The cylinder will also be used for testing plastic reactions for water shutoffs in gas and oil wells.

Expansion of Nowery J. Smith Plant Planned by Parkersburg

Further expansion of the Eureka plant and 20-acre site of J. Nowery Smith Company, Houston, which will be taken over by Parkersburg Rig & Reel Company November 1, has been announced. The size of the plant will be trebled at an estimated cost in excess of $2 million, and some 300 employes will be added to the 75 already employed. The expansion will enable Parkersburg to manufacture at Houston heavy equipment required by oil and gas industries and other major concerns, which it is no longer practicable to ship into the Gulf Coast area from the company's main plant in West Virginia. Such items as the largest heaters and treaters, metal tanks and separators will be made in addition to the Parkersburg line of products, and the present output of the Eureka factory will be continued. The company will maintain the warehouse and store at 6300 Navigation, and its offices in the Mellie Esperson Building, Houston.

Wheelco Office Opened

A district sales and service office has been opened at 107 S. Capitol Avenue, Indianapolis, by Wheelco Instrument Company of Chicago. John E. Anderson will be manager of the office, which will serve most of Indiana, western Ohio and Kentucky, and will also control a sub-office in the Temple Bar Building, Cincinnati, managed by L. A. Wallingford.

Republic National Bank *of* Dallas

Statement of Condition September 30, 1946

RESOURCES

Loans and Discounts	$132,729,368.16
Customers' Liability—Letters of Credit	3,344,749.27
Banking House	2,210,832.76
Furniture and Fixtures	286,300.32
Real Estate for Bank Expansion	240,474.84
Stock in Federal Reserve Bank	600,000.00
U. S. Government Securities	58,095,545.33
Other Bonds and Securities	2,830,882.71
Cash and Due from Banks	65,611,353.75
Total	$265,949,507.14

LIABILITIES

Capital	$ 10,000,000.00	
Surplus	10,000,000.00	$ 20,000,000.00
Undivided Profits		2,252,076.91
Reserve for Dividend—		
Payable October 1, 1946		200,000.00
Reserve for Taxes, Etc.		1,885,822.43
Letters of Credit		3,344,749.27
DEPOSITS:		
Individual	$144,464,155.27	
Banks	74,884,960.85	
U. S. Government	18,917,742.41	238,266,858.53
Total		$265,949,507.14

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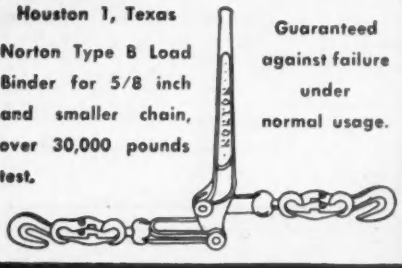

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Knight Manufacturing Is Named Tulsa Distributor for Hewitt

Hewitt Rubber of Buffalo has appointed the Knight Manufacturing & Supply Company as new distributor of the company's mechanical rubber products in Tulsa. Principal items are transmission and conveyor belting and all types of industrial hose.

The new distributorship is headed by Frank Monahan and Dean Knight, who for many years have specialized in the engineering and installation of belts and hose for industry.

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